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IRON TRADE REVIEW

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Routing and Production System Affords Quick Shipment

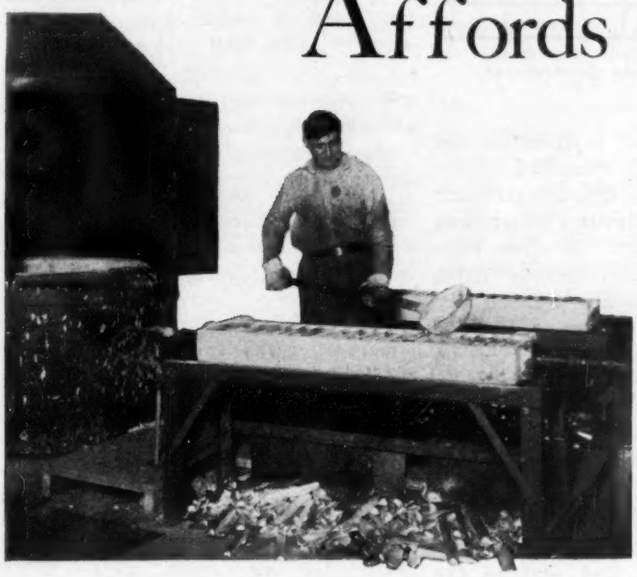


Fig. 1—Ingots are made on water-cooled molds which are tipped to dump the metal

Die Castings Processed Through Various Departments Without Backtracking — Machines Standardized

By H. R. Simonds

Associate Editor, Iron Trade Review

MODERN development of die casting as an established industry is well illustrated by the operations of the Allied Die Casting Corp. in its new plant in Long Island City, N. Y. This plant, completed late last fall, is just getting into full production. The company formerly occupied a smaller building nearby which had been equipped as demand necessitated without any co-ordinated plan. But the many lessons learned in its operation were invaluable aids to the designers of the present efficient and well-co-ordinated manufacturing unit.

The production of die castings is a highly specialized art distantly related to the foundry and the forge shop. It is built around the ingenious and complicated mechanism known as a die-casting machine, and depends in large measure for its success on the resourcefulness and skill of the designers of its dies.

The diemaking department of the new plant occupies as much space as the casting department. The building is four stories high and is built of reinforced concrete construction with large windows on all four sides. It has 75,000 square feet of floor space, and the layout of machines and equipment is such as to give a sense of roominess and freedom from crowding even though the design is based on high production.

The casting department on the top floor is provided with skylights in addition to the large windows. The floor below houses the diemaking shop which maintains close contact with the casting department. Because of the handling of steel blocks and the temporary storage of dies and die parts in the die shop it has been equipped with a maple parquet flooring. Castings produced on the top floor travel down to the second floor to the trimming and finishing department and after being processed continue to the shipping department on the first floor. Here also is located

Deliveries

SHIPPING RECORD
ALLIED DIE CASTING CORPORATION
FACTORY ORDER CASTINGS
SHIPPING DEPARTMENT

Order No. 3846
Date 19

Customer
Address
Ship to Via

Customer's Order No.
Date

Metal	Quantity	Description	Part No.	Die No.	B/P No.
Weight					

Specifications

FORM M-13-C 2M 8ETS 7-29-EJT

SHIPMENTS

Date	P S No.	Quantity	Balance	Date	P S No.	Quantity	Balance	Date	P S No.	Quantity	Balance

Fig. 2—Copy of the factory order which goes to shipping department

the foundry where ingots or metal pigs are cast for the casting machines. These ingots are taken by freight elevator up to the casting department and the work in process flows constantly downward. The plant laboratory is located in a pent house on the roof.

New Plant Brings New System

Advantage of moving to a new plant was taken by the company to put into effect a new routing and production system. Under this system customers' orders on receipt go to the order department where after careful checking a plant work order is made out. A copy of such an order is shown in Fig. 7. It is the duty of the order department to see that each incoming order corresponds with the estimate or with an authorized quotation. If the order is from an old customer, the file is consulted to determine whether the dies are on hand and whether the previous order was produced at a profit. It often happens that a customer in the habit of ordering at a certain price in say 10,000 lots sends in an order for 5000 assuming that the price will be the same. Whenever a change in quantity is made, the new order must go to the plant manager for price approval or for the setting of a new price.

After the incoming order has been checked, a requisition for the shop order is made out and sent to the stenographic department where the actual order is made with six carbon copies. If dies are to be made a separate work order is issued for this, and to distinguish between the two the die orders are made on tan colored stock and the castings orders on white stock. One copy of the die order goes to the die shop where it serves as a notification of work in prospect and enables the foreman of the shop to order his materials. Another copy of the die order goes to the tool department and becomes the authority for the design and construction of trimming and punching tools as may be required.

Copies of the casting order go to all departments concerned and prepare the way for actual production. One copy, for instance, goes to the cost department where it becomes the record of the cost summary on that particular job. The total cost includes the cost of the metal, the

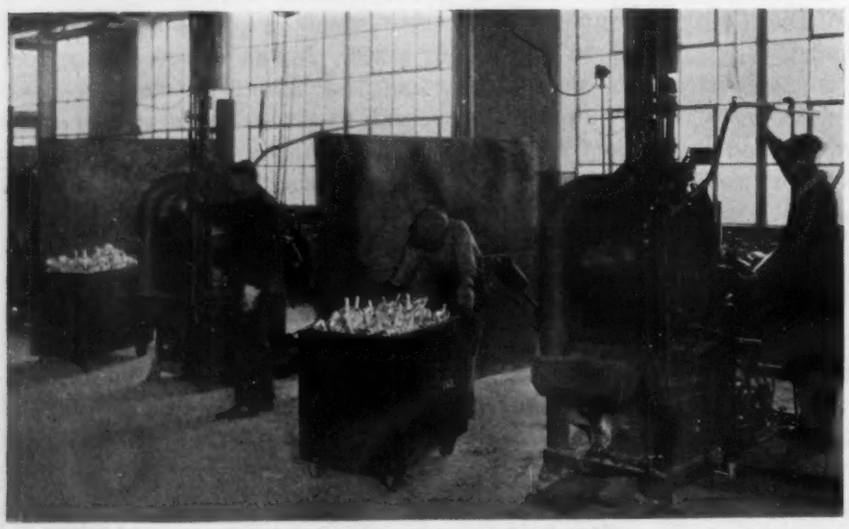


Fig. 3—Long rows of standardized die-casting machines extend down both sides of main casting floor

Standard Casting Alloys

METAL alloys now used for die-casting work are fairly well standardized. The three most common are as follows:

	Element	Per Cent
Zinc Alloy No. 1	Zinc	93.0
	Copper	3.0
	Aluminum	4.0
	Magnesium	trace
Aluminum Alloy No. 1	Aluminum	91.0
	Copper	4.0
	Nickel	4.0
	Silicon	1.0
Aluminum Alloy No. 2	Aluminum	90.5
	Silicon	8.0
	Copper	1.5

The steel used for dies also has been standardized by many manufacturers. A typical steel alloy for aluminum work follows:

	Element	Per Cent
Steel Alloy No. 1	Carbon	0.45
	Silicon	1.10
	Manganese	0.30
	Tungsten	5.00
	Chromium	6.00
	Cobalt	0.75

One company has the following specifications covering die alloys for aluminum work:

	Element	Per Cent
Steel Alloy No. 2	Carbon	0.4
	Silicon	0.15 to 0.30
	Mang'se	0.65 to 0.85
	Chrom.	1.75 to 2.00
	Vanad.	0.20 to 0.30

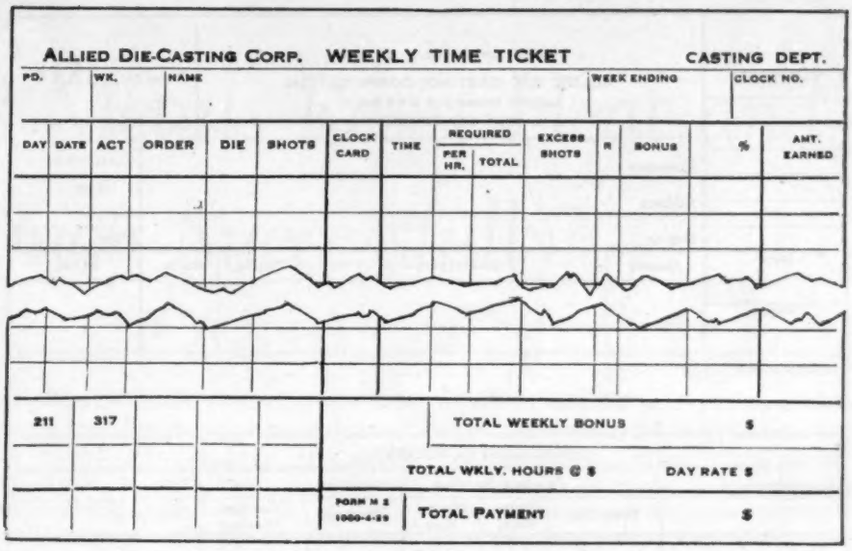
A typical alloy for use on zinc work follows:

	Element	Per Cent
Steel Alloy No. 3	Carbon	0.50
	Silicon	0.45
	Manganese	0.75
	Chromium	1.00

Phosphorous and sulphur are kept low in all of the foregoing alloys, usually 0.025 per cent and under.

overhead apportionment and the labor charge from the cleaning, casting, production and shipping departments.

The form which goes to the shipping department is a card containing the order on one side and a record of shipments on the back. Each day that a shipment is made against the order the date, the quantity shipped, and the balance still to be shipped under the order are entered. In order to keep records under each order from becoming too bulky large orders are frequently split up into four or more smaller ones. Thus if a consumer orders 50,000 of a certain casting the head of the order department may divide this into five factory orders of 10,000 each. A weekly time ticket is made out for each man in the plant. These tickets are of different color to indicate the different departments. For instance, the casting department has a blue ticket, the trimming department a white ticket, the tool department a yellow ticket and the die department a buff ticket.


ALLIED DIE-CASTING CORP. WEEKLY TIME TICKET CASTING DEPT.

PD. WK. NAME WEEK ENDING CLOCK NO.

DAY	DATE	ACT	ORDER	DIE	SHOTS	CLOCK CARD	TIME	REQUIRED PER HR.	REQUIRED TOTAL	EXCESS SHOTS	R	BONUS	%	AMT. EARNED
211		317												

TOTAL WEEKLY BONUS $

TOTAL WKLY. HOURS @ $ DAY RATE $

FORM H 2 1000-4-29 TOTAL PAYMENT $

Fig. 4—Weekly time tickets carry distribution of all labor to the different order numbers and these form the basis of an accurate cost system

Dies Are Expensive

Each man's time is distributed to the various factory order numbers, and these time records and the charge slip for material all go to the cost department for checking and entering. The system is not as simple as it sounds for there are adjustments to be made for bonuses and for piece work pay in certain departments. However, the importance of accurate costs in a die-casting plant is well appreciated and the cost department and estimating and production departments work in close co-ordination.

In a foundry patterns usually are considered stock in trade inasmuch as their possession helps greatly in bringing in additional work and the same is true even to a greater extent with dies in a die-casting plant. Few people outside of the die-casting industry itself realize the complexity and elaborate detail of the modern set of dies for the casting work. The cost of the average die used for producing die castings approximates or perhaps even exceeds the cost of an average automobile. A typical die is shown on Fig. 5. This is intended for use on a hydraulically-operated machine which automatically moves the cores into place for casting and then withdraws them afterwards for the removal of the piece. Practically all dies are water cooled and all are designed with some provision for the escape of air as the metal rushes in.

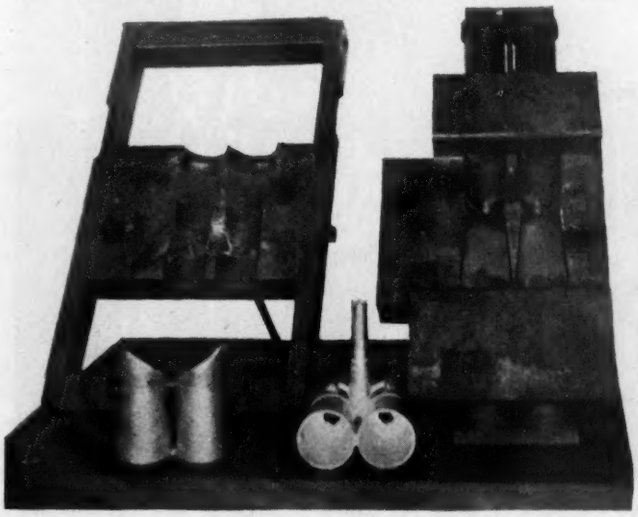
Dies usually are made of chrome-vanadium steel and are heat treated carefully before being placed in service. An important feature of the Allied Die Casting Co. plant is its modern heat-treating department. Before starting work on a die any strains, which may be present in the alloy steel block, are eliminated by normalizing. Later the die is heated above the critical temperature then quenched in oil and drawn.

The design of a typical die for die-casting work is similar to a green sand mold in that it is composed of two main parts, has gates for the inflow of metal and makes use of cores. But in many other respects it differs widely.

Ejector Pins Provided

Nearly all dies are provided with ejector pins. These are slender steel rods withdrawn below the surface of the impression during casting but moved up through the surface and against the casting to dislodge it from the die after the die has been opened. These ejector pins are made of high-carbon steel carefully heat treated, and there often are 20 to 30 to a single die. In the withdrawn position they are flush with the surface of the die and their imprint on the castings scarcely is noticeable.

The process of casting is fairly simple, but back of this simplicity is the elaborate service furnished each



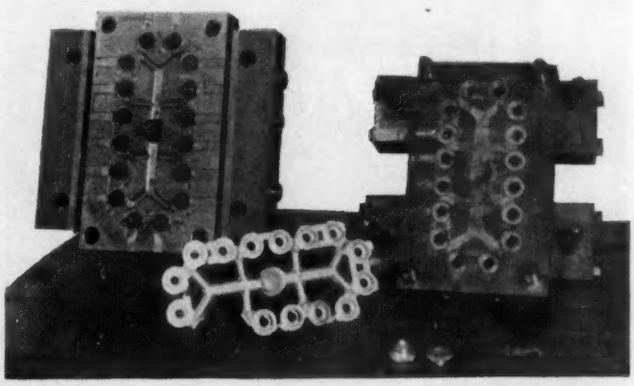


Fig. 5—(Left)—The shape of these eye-piece castings involves two sets of cores introduced from opposite sides. Fig. 6—(Above)—Aluminum bushings are made 16 to each impression

COST ASSEMBLY SHEET

ALLIED DIE CASTING CORPORATION

FACTORY ORDER CASTINGS

COST DEPARTMENT

Order No. 3846

Date 19

Deliveries

Customer

Address

Ship to Via

Customer's Order No, Date

Metal / Weight	Quantity	Description	Part No.	Die No.	B/P No.

Specifications

FINAL COST SUMMARY

Date Completed Quantity Finished

	Direct Cost	Casting Hours	Rate per Hour	Overhead	Cost with Overhead	Cost per M
Metal						
Cleaning						
Casting						
Total Mfg. Cost						
Overhead						
Total Cost						

CASTING DEPT.						CLEANING DEPT.						FINISHING DEPT.					
Date	Clock No.	Hours	Castings	Rate	Amount	Date	Clock No.	Hours	Castings	Rate	Amount	Date	Clock No.	Hours	Castings	Rate	Amount

Fig. 7—One copy of factory order for castings goes to cost department where it becomes the record of the complete cost summary of job

die-casting machine and the intricate design of the die as already suggested. Each die-casting machine must be equipped with gas for heating the bath of metal, with a high-pressure air line for shooting the metal into the die, a low-pressure air line for cleaning the die after each shot, running water intake and outlet for cooling the die and electricity for light. In addition, nearly all modern machines have the dies opened and closed hydraulically, which requires a high-pressure hydraulic system with a return pipe for the discharge. At the Allied Die Casting plant most of the machines have eight service pipes, four for water, two air, one each for gas and electricity.

The elaborate piping system used to serve the die-casting machine is carried on hangers from the ceiling of the floor below the casting floor where the pipes are always in easy access for changes or repairs. Each complete system is painted a different color to facilitate tracing or locating a pipe at any point of the building for extension or alteration. In addition to the piping and the utilities mentioned, there is an exhaust system to remove the fumes and hot air from each machine and also a cold air blower system to provide fresh cool air for the machine operators.

To make die castings, a die is fitted to a casting machine, ingots are melted in the machine's reservoir, compressed air is turned on, hydraulic pressure is admitted to the operating cylinders, a lever is pressed which sends a shot of metal into the die and the first casting is cast; the die then is opened, the ejector pins are moved forward and the casting drops into a container or else is removed by hand. This process is repeated until an order is complete.

Temperature Automatically Controlled

The die-casting machine used exclusively at the Allied Die Casting plant is one designed about seven years ago. It has been improved and developed since. The ingots are melted by gas in a large reservoir at one end of the machine and the temperature of the metal bath is maintained automatically by pyrometer control. The main frame of the machine carries the die with the elaborate mechanism for the placing and withdrawing of the various cores, for the closing and opening of the dies and for the ejection of the casting after it has been made. Within the reservoir is a small container known as a gooseneck which ordi-

(*Concluded on Page* 76)

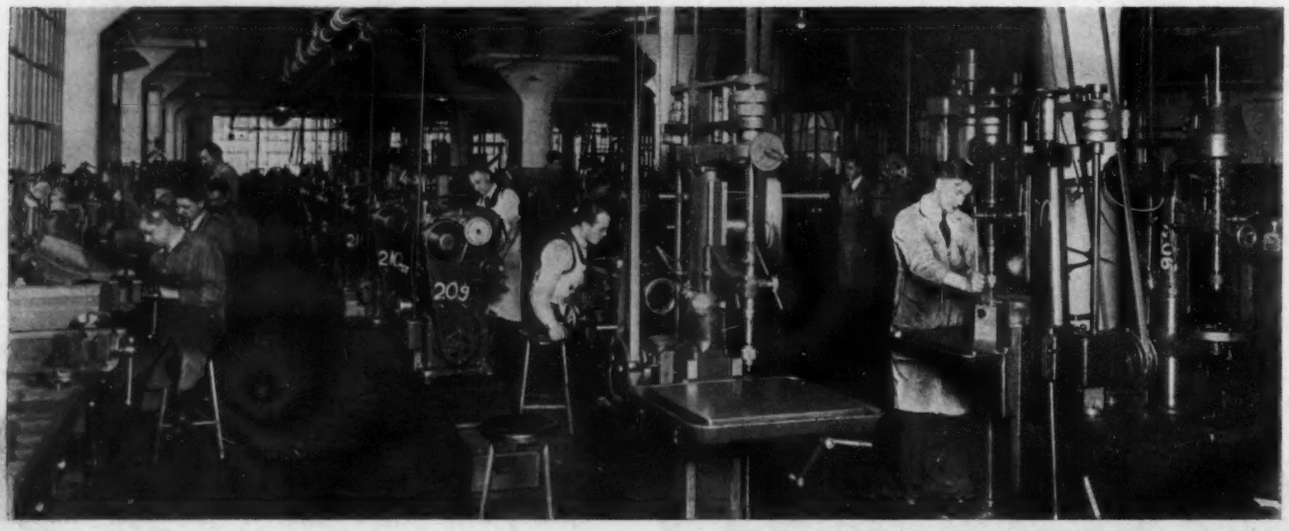


Fig. 8—Elaborate precision work required in the construction of dies calls for modern machine tool equipment

Can Ferrous Metals Resist Heat and Corrosion Successfully?

By H. J. French

ORDINARY irons and steels generally are not considered resistant to corrosion, nevertheless they are used widely in contact with corrosive agents on account of their low cost and desirable properties for structural work. It sometimes is more economical to sacrifice stability and make more frequent replacements than to use metals with slightly improved corrosion resistance, but greatly increased cost. However, any choice requires consideration of many factors.

Cast irons sometimes are used in contact with salt waters in condensers, with the waste waters containing ammoniacal materials from bone char filters in the manufacture of cane sugar, with raw juice in the manufacture of beet sugar, with moist sulphur gases and with concentrated sulphuric acid. It is claimed that cast iron mixing pans used in the fertilizer industry for the treatment of phosphate rock with sulphuric acid may last from 5 to 15 years, whereas the life of steel under the same conditions is around 2 years or less. Cast irons low in silicon are employed in contact with caustic alkalis.

Industrial Applications Are Severe

Wrought iron, charcoal iron, ingot iron and low-carbon structural steels likewise find many industrial applications which may be considered severe. One or the other is found in condenser tubes, in raw juice piping in the manufacture of beet sugar, in pump parts for handling the alkaline process liquors in the manufacture of sulphite pulp, in tops of towers subjected to corrosive action arising from the chemical treatment of gasoline and in contact with the strong, pure liquors in the manufacture of cane sugar.

Other applications of importance can be cited but a more extended discussion would serve no useful purpose, as these comments indicate a wide diversity of industrial uses. It may, however, be well to mention the copper-bearing steels, containing a few tenths of one per cent or less of copper. Their physcial properties are no different from similar copper-free steels, and the question properly may be raised whether they are better or worse in resistance to ordinary atmospheric corrosion. It is fairly well established, however, that they are somewhat superior to ordinary structural steels in resistance to atmospheres containing sulphur, such as are encountered in large industrial centers.

The practice of one manufacturer is to furnish steel containing 0.25 per cent copper for resisting usual atmospheric corrosion and as high as 1 per cent copper in steel tubing for oil valve casing, under water or moist soil conditions. However, in lap welded pipe the copper generally is less than 0.5 per cent, for with more than this the steel will not weld.

Among the important corrosion-resistant alloys of iron are those containing about 13.5 per cent or more of silicon and 0.5 to 1 per cent total carbon, now marketed in this and other countries under various trade names. On account of their low strengths, extreme brittleness and relatively high cost they are used mainly under conditions which cannot be met satisfactorily with other materials. They show excellent stability in contact with nitric, sulphuric or mixed, acids in both cold and hot solutions, but seem to have given variable resistance to hydrochloric acids, for various writers disagree upon their behavior in this particular. They are useful in contact with acetic or phosphoric acids and are said to be better than most metals, although considered costly, in tanks for the decomposition of soap stock or foots by sulphuric acid. They are recommended for contact with chlorbenzol when moisture is present.

The commerical products have a strength in tension of only 9000 to 16,000 pounds per square inch in compression, of 65,000 to 75,000 pounds per square inch, and a shore hardness in the neighborhood of 50. Their transverse strength is usually less than half that of high quality cast iron, and they are nonmachinable.

Ferrosilicons Hard to Cast

While these ferrosilicons have a relatively low melting range of about 2200 to 2300 degrees Fahr., they are not easy to cast successfully. Variable stability is associated in many cases with variations in metallurgical quality but differences in silicon between 13.5 and 18 per cent may have a marked effect upon performance. Alloys containing 15 to 20 per cent of this element are in general better than those with less.

The chemical resistance of the ferrosilicons seems to be improved by the addition of some other elements, such as nickel or chromium, and this is confirmed for nickel by reported tests. Records of excellent stability of these metals seem to indicate that the problems relating to more regular performance are largely metallurgical.

The commercial nickel steels are of

Selecting Proper Alloys Proves Difficult

IN THE accompanying article abstracted from a paper presented before the fiftieth general meeting of the American Electrochemical society in Washington last fall, the author discusses the numerous factors influencing the choice of ferrous alloys to resist heat and corrosion. Alloys entirely satisfactory under certain conditions may prove worthless under other conditions. For this reason, selection of the proper material requires a broad knowledge of alloys both chemically and physically. The author of this article, H. J. French, is in a position to speak authoritatively. At the time the paper was prepared, he was senior metallurgist, bureau of standards, Washington. At present, he is associated with the development and research department, International Nickel Co., Bayonne, N. J.

some interest from the standpoint of resistance to corrosion. Those containing about 5 per cent nickel, similar to steels used for case hardened parts in the automotive industry, resist embrittlement caused by caustic fusions better than ordinary structural steels.

Steels containing from 25 to 38 per cent or more of nickel, 0.5 per cent or less of carbon and in some cases additions of other elements, are more resistant than ordinary steels to atmospheric corrosion and to fresh and salt waters. Some have been used in valve stems in salt water lines and in boiler tubes. As a group they have better resistance than plain carbon steels to dilute sulphuric or hydrochloric acids, but are especially noted for their low coefficients of thermal expansion. On this account they have been suggested as the base metal for enamel-coated products, to cut down destruction of the coating on heating and cooling, due to differences in expansivity between it and the base metal. Unfortunately, these steels are not always invariable in their properties with respect to repeated heating and cooling, and it is sometimes difficult to duplicate with reasonable accuracy the desired expansivity in the selected composition.

The instability of the high-nickel steels is probably greater than is generally recognized. Valve stems occasionally have been found so corroded that the threads could be picked off with the thumb nail; in some cases stems have fallen apart in the valve, longitudinally at the fracture. Instances are known where high-nickel steel valves which have remained open in line for years, could not be closed.

Chromium Steels Vary

The high-chromium steels constitute a promising, and for some purposes, a valuable group of corrosion-resistant metals. However, they are costly and their stability has in some cases been overestimated. Their chemical compositions vary widely and include steels in which chromium alone is the special element, those containing chromium with appreciable additions of copper, silicon, tungsten, manganese or molybdenum, and on important series containing high proportions of both nickel and chromium with a small percentage of silicon.

A division may be made into two groups, first, steels which respond to heat treatment and in which a wide range in physical properties may be secured; second, steels which do not harden appreciably when quenched and which generally are characterized by low elastic properties.

The first group consists largely of steels containing 15 per cent or less of chromium and the second of steels higher in chromium or containing high proportions of both nickel and chromium. The type containing about 0.3 per cent carbon and 13 per cent chromium, commonly called stainless steel, is perhaps best known for its use in cutlery and serves well for this and analogous purposes, such as dental tools, surgical instruments, etc. Actually, it is not stainless, but has good resistance to atmospheric, fresh and sea-water corrosion, and withstands oxidation and staining from ordinary food products.

Stainless Steels Popular

It exhibits air-hardening tendencies and therefore is sensitive to manufacturing conditions. It likewise requires hardening from relatively high temperatures and polishing to develop its best resistance to staining. These features, combined with the fact that a decrease in the carbon content of high-chromium steels tends to improve their stability, have formed the incentive for the production of alloys coning about the same proportions of chromium, but less than 0.12 per cent carbon, commonly referred to as stainless or rustless irons or mild stainless steel.

Increase of chromium content to 20 per cent or more seems materially to improve resistance to oxidation at atmospheric and elevated temperatures, as well as resistance to the corrosion of fresh and sea water or salt air. While the plain chromium steels do not discolor readily in contact with fruit acids, they lose weight after long periods and are attacked rapidly by mineral acids with the exception of nitric.

To improve the acid-resisting properties, nickel is added in amounts varying from 5 to 25 per cent or more. The steels with about 25 per cent nickel are stable in contact with mineral acids but are expensive and do not have the degree of malleability nor the easy machining properties desirable for general manufacturing purposes. Some however, are produced in a wide variety of forms.

Small amounts of copper, from 0.4 to 1.5 per cent, are added sometimes to the high-chromium steels to improve their acid-resisting properties and seem to improve as well their resistance to oxidation and fresh and salt water corrosion. These constitute one of the valuable groups of steels high in chromium.

They are readily machinable, require no heat treatment, have good mechanical properties and are fabricated easily; the cost of the added copper is small. Molybdenum and tungsten sometimes are used for the same purpose but are more expensive.

The selection of ferrous metals for high temperature service presents problems similar to but varying in detail from those for corrosion resistance at atmospheric or slightly elevated temperatures, and ordinarily must include consideration of stability. However, physical properties, such as hardness, ability to withstand stresses, resistance to erosion, etc., are generally of greater importance and frequently constitute the controlling factor in any choice which is made.

Many irons and steels are used at temperatures well above atmospheric. In this discussion, attention will be given mainly to those which are suited for severe requirements, and which come within the following groups: cast irons, malleable iron and ordinary carbon and low alloy-content structural steels; chromium-iron and nickel-chromium-iron alloys.

Cast irons and ordinary steels are used widely in steam service, furnace construction, ingot molds and stools, containers for metal baths and many other purposes, and their high temperature properties have received considerable attention.

Cast Iron Will Shrink

Cast irons, as is well known, are subject to permanent changes in volume upon repeated heating to high temperatures and as a result their field of usefulness has been somewhat restricted. This effect, commonly called "growth," is dependent upon composition and the time-temperature changes to which the iron is subjected. Gray irons generaly grow while white irons are said to shrink but with prolonged heating of white irons containing more than 3 per cent of carbon there is a tendency to deposit temper carbon and the metal will then tend to grow. An alloy of practically constant volume under repeated heating to temperature as high as 1650 degrees Fahr. is a white iron containing about 3 per cent carbon and only small amounts of other elements and in particular, less than 0.3 per cent silicon. This is recommended for annealing ovens, rolls, fire bars, steam valves, turbine casings, etc.

In steam service, cast iron is recommended for a total temperature of 450 degrees Fahr, when the pressure does not exceed 25 pounds gage and for 100 degrees Fahr. when gage pressure does not exceed 75 pounds. Malleable irons and semisteels are recommended for temperatures up to 500 degrees Fahr. with a maximum

gage pressure of 200 pounds; at higher temperatures cast or forged steels are preferred.

The compositions and treatments of steels may be varied to meet specific requirements at temperatures well above 500 degrees Fahr. but these alloys cannot be expected to stand up when continually subjected to high stresses at temperatures exceeding 1200 degrees Fahr. At moderately high temperatures ranging up to 1000 degrees Fahr. improved mechanical properties can be obtained in small sections by heat treating but care should be exercised that the tempering subsequent to hardening is carried out at temperatures above those encountered in service, otherwise the metal may not be in a stable condition.

Critical Temperature May Be Raised

The temperatures of marked weakening of ordinary carbon steels may be raised by addition of special elements such as chromium but for severe service at extremely high temperatures, for example, above 1500 degrees Fahr., it seems necessary to seek alloys of which iron is a minor constituent.

An important application of cast steels is in valves and fitttings for power plants and oil refineries. These usually are made from 0.3 per cent carbon steel or medium carbon, low nickel-chromium steels. The latter variety is claimed to have superior load carrying ability at 800 to 1000 degrees Fahr.

The possibilities of meeting special requirements at high temperatures with special steels, through the use of different combinations of alloying elements, may be illustrated by a few applications and the results of recent research.

Inlet and exhaust valves of internal combustion engines may, for working temperatures up to 1100 degrees Fahr., be made of ordinary 3 per cent nickel steel, but for more severe service, often encountered in airplane engines in which the working temperatures are between 1100 and 1400 degrees Fahr., a high-chromium steel containing about 0.65 per cent carbon and 10 per cent chromium is recommended. Working temperatures above about 1400 degrees Fahr. require the use of such steels as the high-tungsten-chromium type containing about 0.65 per cent carbon, 16 per cent tungsten and 3.75 per cent chromium. However, conditions sometimes are encountered in which none of these is entirely satisfactory. In certain tests the chromium-tungsten steels scaled excessively, while those high in chromium, about 13 per cent or less, and to a smaller degree the conventional low-carbon types containing both chromium and silicon, lost their hardness at the high temperatures of operation with resultant galling of that portion of the valve stem subjected to the exhaust flame. Similar difficulties were encountered with the steels containing 20 to 25 per cent nickel and 5 to 15 per cent cromium. The best of the group studied, although not wholly satisfactory, contained relatively high carbon, in the neighborhood of 1.2 per cent, 12 per cent chromium, 3.2 per cent cobalt and 0.7 per cent molybdenum.

Aside from the value of the different alloys for valves, these tests bring out an important feature, likewise confirmed in other work, that the high-tungsten-chromium steels retain a relatively high degree of hardness at high temperatures up to 1400 degrees Fahr. as well as good load carrying ability but have rather unsatisfactory resistance to scaling. The low-carbon high-chromium steels are superior in resistance to scaling, but soften more at the highest temperatures. These characteristics have, of course, an important bearing upon many other applications of metals at high temperatures.

The construction of steam and gas turbines presents problems involving resistance to erosion and ability to withstand various types of stresses, acting simultaneously. Conbined with the desire for low-cost materials, ease of fabrication and reproducibility are severe high temperature service requirements. Monel metal, high-nickel and high-chromium steels have all found applications in this field but the latter appear to be better adapted to the present and more severe requirements.

Hardening Improves Performance

Hardening some steels appreciably improved their performance under drastic conditions but hardness itself as ordinarily measured is no certain criterion of the erosion resistance of various metals. Both the low and medium-carbon high-chromium steels, types comparable to stainless iron and stainless steel, show favorable characteristics but the best performance was given by the high-carbon high-nickel steel, which also contained appreciable proportions of chromium, silicon and manganese. Recent experiences in this country indicate favorable properties for turbine construction in both the high-chromium irons and the nickel-chromium alloys.

Resistance to sulphur gases at high temperatures is sometimes an important industrial requirement. Ordinary steels and irons and alloys high in nickel are attacked readily by gases generated in the combustion of high sulphur fuels, sulphide ore roasting furnaces and the cracking of high-sulphur oils; for such conditions other alloys are required. The alloys which now appear most promising are the high chromium steels or irons containing about 20 per cent chromium.

Higher Percentages Best

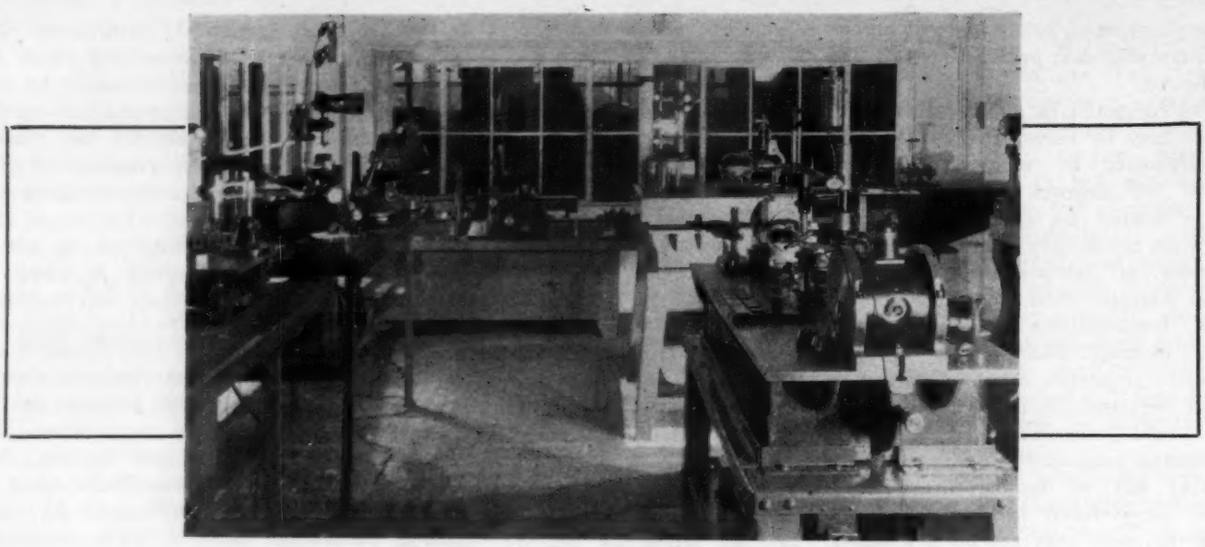
Various test data indicate that the steels containing 20 per cent or more of chromium are superior to those containing 13 per cent or less. However, ordinary low-carbon steel is better than the 80:20 type of nickel-chromium alloy. While such data must be interpreted with care, it is interesting to note that comparable performance was obtained with the chromium-iron alloys and the nickel-chromium-iron alloys, provided the nickel in the second group did not materially exceed the customary proportions of chromium present.

The usefulness of the high-chromium irons for contact with sulphur gases at high temperatures is indicated further by the fact that those alloys containing 25 per cent or more of chromium, high carbon to improve abrasion resistance have given satisfactory service for arms and rabbles in sulphuride ore roasting furnaces.

Compares Trade Customs

The Ohio Foundries association, Cleveland, recently issued a 16-page mimeographed booklet on the comparison of foundry trade customs and sales agreements of various foundrymen's organizations. The data given in the booklet were compiled with a view to formulating a set of foundry trade customs and sales agreements that would be applicable to the whole foundry industry. The materials of such agreements are compared under the following headings: General comparisons; estimating requirements for quotations; condition of pattern equipment; correctness of patterns; identification of patterns and core boxes; freight, cartage, boxing and crating of patterns; pattern loss by fire; pattern storage; replacement of castings, defective castings; claims for error terms; special service changes in orders; liabilities in case of fires, strikes cancellation of orders; acceptance of quotations; quotations on various classes of work, and many other heads.

Abraham Darby of Shropshire, England, first used coke in a blast furnace in 1735.



Ford Motor Co. employs many intricate machines in checking master gages. The illustration shows one floor of the gage inspection department in the Rouge plant

Effects Large Savings by Chromium Plating Gages and Tools

IMPORTANT savings in time and costs have been effected in the use of gages, tools and other equipment by the Ford Motor Co., Detroit, as the result of the successful application of hard chrome plating to these gages and machine parts.

The Jan. 15 issue of *Ford News* points out that for many years, it was known that the use of hard chrome plate would add greatly to the length of life of these tools. The problem was to find the right kind of steel to use, as well as the right method of manufacture, so that the hard chrome plate would stay on, instead of peeling or chipping off. In some cases, the plating was so soft that it could be filed.

Choose Proper Grinding Wheels

Experiments were conducted to find the kind of wheels to use in grinding the steel, and the proper method of heat treatment. Having finally solved these problems, company men are now obtaining results that seem almost startling.

By use of the plate gages now are giving 218 hours in certain grinding operations, where formerly four was the limit. Costs have been reduced more than one-half. Gaging applications that cost 8¼ to 9½ mills declined to 3½ and 4½ mills.

The snap gage used in checking the diameter of the crankshaft pin bearings has a wearing surface limit on each side of 0.0001-inch. After this was used up, the gage went back to the tool room. The short life was caused by the fact that the surface of each gage had an annealed skin, varying in depth from a few millionths to a possible thickness of 0.0002-inch. It may have been annealed by the heat of the grinding wheel at the time the gage was ground. When the surface was tested for hardness, the machine normally used penetrated the soft portion and for that reason failed to check the wearing surface.

Another example was the plug gage used on the small end of the connecting rod. Before it was plated, it could be used only about 1300 times before it had to be retired because of wear; after plating, this increased to 18,034 holes. The cost decreased from 3¼ mills per application to ½ mill. The wear allowed on this gage before scrapping is only 0.00005-inch.

The amount of scrap or rejected parts in production has decreased because the gages retain their close limits longer. The assembly line thus has wider limits within which to work.

On tool fixtures such as multiple heads, grinding spindles, drill press spindles and similar steel parts, some cold-heading dies and sliding surfaces where friction develops, the parts will show a saving of from six to 20 times after plating. The life of gages, tools, centers and machine parts on the job is being increased many fold. The fixtures are so impartially tested and thoroughly checked that there can be no doubt as to the accuracy of the results obtained. Each piece is assigned a number. Its measurements are taken by a specialist in a constant temperature room. A card is made out for the tool or gage and filed, after which the part goes into the plant for eight hours.

Gages Carefully Checked

A count is made of the number of applications made, or pieces checked. The gage, plug or whatever it happens to be, then remains in the constant temperature room for another eight hours, after which it is rechecked and sent back to the job. This process continues until the surface has worn down and the tolerance is used up. In that manner the life of the tool or the method of manufacture is determined.

Class I railroads Jan. 31 had 392,552 surplus freight cars in good repair and immediately available for service, according to the American railway association, a decrease of 45,643 cars compared with Jan. 23.

Iron and Steel Industry Seeking More Extensive Research

Dr. Zay Jeffries, in Address at Annual Meeting of American Institute of Mining and Metallurgical Engineers, Claims Research a "Pressing Need"

ALLOY steels, the influence of nitrogen on steel and the production of gray iron from steel scrap were subjects receiving major attention at the iron and steel technical sessions held as part of the annual meeting of the American Institute of Mining and Metallurgical Engineers at the Engineering Societies building, New York, Feb. 17-21. Other subjects discussed included a new method of producing artificial manganese ore, properties of steel rails at elevated temperatures and a new method for determining iron oxide in liquid steel. In the institute of metals division cemented tungsten carbide was discussed and a corrosion session was held.

Simultaneous technical sessions were held both morning and afternoon during the four days of the convention. The Howe memorial lecture on the future of the iron and steel industry was presented by Dr. Zay Jeffries Thursday afternoon.

With an attendance of over 1500 a new record in the institute's history was established. At the annual dinner Wednesday evening two medals and one prize were awarded. William H. Bassett, metallurgist, American Brass Co., Waterbury, Conn., was elected president of the institute. W. J. MacKenzie, vice president, Interstate Iron & Steel Co., Chicago, was named chairman of the iron and steel division and Dr. Jeffries was chosen chairman of the institute of metals.

Future Holds New Opportunities for Steel

THE American iron and steel industry can look forward not only to a healthy but even a romantic future according to Dr. Zay Jeffries, consulting metallurgist, Cleveland, who delivered the annual Howe memorial lecture. His address was entitled, "The Future of the Iron and Steel Industry."

When the ample iron-rich ores in North America, sufficient to last another generation, are depleted vast quantities of lower grade deposits will be available and the growth of our iron and steel industry will not be limited, according to Dr. Jeffries. Speaking of future tendencies in the industry the speaker said he thought the movement toward higher grade steel and alloy steel, now in progress, would continue and that the growth of the industry would be greater in dollars than in tons. Nevertheless, he predicted a steady increase in tonnage and said that in general the increased use of nonferrous metals and nonmetallic materials tended to increase the use of steel. As a case in point

Officers Named

IRON AND STEEL DIVISION

Chairman

W. J. MacKenzie

Vice president, Interstate Iron & Steel Co., Chicago.

Vice Chairmen

C. S. Robinson

Second vice president, Youngstown Sheet & Tube Co., Youngstown, O.

J. T. MacKenzie

Metallurgist and chief engineer, American Cast Iron Pipe Co., Birmingham, Ala.

C. E. Meissner

Development engineer, Chrome Steel Works, Carteret, N. J.

Executive Committee

A. L. Feild

Research engineer, Simonds Saw & Steel Co., Lockport, N. Y.

R. F. Harbington

Chemist and metallurgist, Hunt-Spiller Mfg. Corp., Boston.

E. F. Kenney

Metallurgical engineer, Bethlehem Steel Co., Bethlehem, Pa.

Secretary

Thomas T. Read

New York.

Officers Elected

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

President

William H. Bassett

Metallurgist, American Brass Co., Waterbury, Conn.

Vice Presidents

Henry Krumb

Consulting mining engineer, Salt Lake City, Utah.

Scott Turner

Consulting engineer, United States bureau of mines, Washington.

Secretary

H. Foster Bain

New York

Treasurer

Karl Eilers

Metallurgist, New York

Officers Named

INSTITUTE OF METALS DIVISION

Chairman

Dr. Zay Jeffries

Director, research bureau, Aluminum Co. of America, Cleveland.

Vice Chairmen

J. R. Freeman Jr.

Physicist, bureau of standards, Washington.

Sam Tour

Vice president, Lucius Pitkin Inc., New York.

Executive Committee

H. M. Williams

Chemist and metallurgical engineer, Frigidaire Corp., Dayton, O.

J. L. Christie

Metallurgist, Bridgeport Brass Co., Bridgeport, Conn.

Arthur Phillips

Metallurgist, Hammond laboratory, Yale university, New Haven, Conn.

Secretary

William M. Corse

Consulting metallurgist, Washington.

he said that concrete, by improving roads throughout the country, has made possible the great increase in the automobile industry with its attendant heavy tonnage of steel. The increase in the use of nonferrous metals has been more rapid than the increase in consumption of iron and steel, but the proportion of all nonferrous metals to iron and steel is still about 1 to 20 and the development of stainless steels opens up new avenues for the further extension of the iron and steel industry. Copper has been indispensible in the electrical industry, yet as a result of the extensive use of copper in this field, there has been an even greater gain in iron and steel tonnage required for electric machinery, transmission towers and new buildings.

Original Research Needed

The progress in mechanical engineering and labor saving processes in the iron and steel industry has been excellent, according to Dr. Jeffries, but in the matter of research to develop new processes, new uses and new materials, we have been prone to lean on the work in Europe. One of the great pressing needs of the American industry today, in Dr. Jeffries' opinion, is more extensive research. He said he felt encouraged by research work recently developed and he mentioned particularly the work of Dr. C. H. Herty Jr., at the Pittsburgh experiment station, bureau of mines, the extension of research of the United States Steel Corp. and other steel companies, the work of G. B. Waterhouse, Massachusetts Institute of Technology, the work of H. W. Gillett at Columbus, O., and the research activities of technical societies and business journals.

In addition to the need for research work Dr. Jeffries feels the iron and steel industry is in need of greater standardization of products. He said this is particularly true in the case of steel specifications. The development of alloy steel has increased the number of specifications called for until it is not uncommon for steel companies to be required to meet thousands of different specifications.

The iron and steel industry employes about 900,000 people and an investment of about $14,000,000,000 to produce the annual output of 50,000,000 gross tons of steel ingots and 40,000,000 tons of pig iron. It requires the mining of 70,000,000 tons of iron ore, 15,000,000 tons of limestone and 120,000,000 tons of coal each year. Many changes may be expected in the future which will tend to increase or decrease the use of iron and steel but Dr. Jeffries feels that as in the past these changes will more or less offset one another. He mentioned one of the developments which may tend to lower the use of iron and steel as the gradual change from mechanical to chemical processes. As an example of this he cited the removal of snow in which activity chemical processes are proving successful. He said that as methods of transmitting power by wire were improved, we might expect less power on wheels with a resultant diminished use of steel. Development of television might conceivably so improve the character of long distance conference as to reduce the amount of traveling which would mean less steel for railway equipment. He foresaw a fundamental change of building technique due in part to the development of artificial sunlight, thus doing away with the necessity for windows. Windowless buildings would require less steel for a given volume of building space.

W. H. BASSETT

Elected president of the American Institute of Mining and Metallurgical Engineers. He is metallurgist, American Brass Co., Waterbury, Conn.

Gray Iron from Scrap

Several new developments which seem destined to become of far-reaching significance to the iron and steel industry were described in papers presented before the iron and steel division. One of these dealt with a method of producing gray iron from light steel scrap in a new type of electric furnace. Where scrap is plentiful and electric power available at low cost, this method is claimed commercially feasible. Another development is a new method of producing artificial manganese ore which, it is claimed, will save a large portion of the annual manganese requirements in the iron and steel industry. A third development is a new method for determining iron oxide in liquid steel.

New Officers Announced

The iron and steel sessions started Wednesday with the annual meeting of the division at which new officers for the coming year were announced. A complete list of these officers is presented in an accompanying box. In the first paper Perry G. Harrison, general manager, Evergreen Mining Co., Ironton, Minn., described the method of sintering ores at his plant. The company first installed a 42-inch sintering machine as an experimental unit but did not obtain satisfactory costs. He learned that both at Buffalo and Chateaugay, N. Y., 72-inch sintering machines were in successful operation. The 42-inch machine accordingly was scrapped and a new 72-inch machine installed. With this machine Mr. Harrison said power costs below 16 cents per ton were secured and an average of 16.7 tons of sinter were produced per man shift.

T. L. Joseph, supervising engineer, bureau of mines, north central experiment station, Minneapolis, told of the work of his bureau in examining the interior of blast furnaces in operation. He said the investigation had developed information helpful in loading blast furnaces for a more uniform gas percolation.

Following Mr. Harrison's paper Mr. Joseph presented a paper prepared by himself and two of his associates, E. P. Barrett and C. E. Wood, metallurgists. The paper described methods of producing artificial manganese ore as a by-product in the reduction of manganiferous iron ores. Ore deposits totaling 44,000,000 tons of manganiferous iron ores, which means about 4,000,000 tons of metallic manganese were said to exist in this country and the importance of recovering this manganese may be seen from the fact that an average of more than 14 pounds of manganese is required per ton of steel production. The method of recovering manganese developed at the north central experiment station has been highly successful and a manganese slag has been secured containing nearly 87 per cent of the manganese in the ore. Difficulties with viscous slags were experienced when the iron oxide was reduced, but this was overcome by adding silica, or regulating the amount of silica in the iron ore. The paper

was received as a significant development, expected to have far-reaching effect on the iron and steel industry. this discussion it was brought out that it cost about $23 to produce the combination of one ton of metal and 0.3 ton of the manganese slag. Taking $16 as the cost of the metal this left $7 as the cost of 0.3 of a ton of slag or about $24 as the cost of a ton of manganese ore (slag).

New Developments Recorded

A paper describing some new developments in the production of electrolytic iron was presented by Robert D. Pike, consulting engineer, Emeryville, Calif. The paper had been prepared by Mr. Pike and four associates, George H. West, L. V. Steck, Ross Cummings and B. P. Little, all consulting engineers with the Kalif Corp., Emeryville, Calif. In introducing the speaker the chairman stated that William E. Eustis, Boston, one time producer of electrolytic iron in Connecticut and in close touch with the industry, had made the statement that no electrolytic iron was now being produced in this country. Mr. Pike said that the plant which he described was ready to produce electrolytic iron commercially if a demand should develop. One feature of the method described is the use of revolving partly submerged disk cathodes. Another feature is the use of a hot electrolyte. The paper by T. F. Baily, Baily Furnace Co., Canton, O., on production of gray iron from steel scrap in the electric furnace also was received with enthusiasm. Mr. Baily described a new type of electric furnace used for pig iron production. This furnace of the shaft type had three electrodes set at an angle of about 15 degrees at the top of the furnace and one electrode at the bottom. The furnace shaft was filled with coke so that the arcs of the three upper electrodes played directly on the top of the coke column, the current flowing from the electrodes at the top through the coke column to the bottom electrode. The height of the coke column was approximately 6 feet and as the furnace charge melted and trickled down through this column it absorbed carbon from the coke to the saturation point. The paper described more than 100 heats all showing practically full carbon saturation, and all producing gray iron.

In the discussion following the paper it was estimated that 750 kilowatts per ton of pig iron would be required for the operation under good commercial conditions. In answering questions Mr. Baily said that the coke was fed in with the charge, that the furnace was lined with 70 per cent alumina brick. He said because of the continuous operation and the amount of cold material always at the top, the roof of the furnace seldom got above a temperature of 1600 to 1800 degrees Fahr.

In experiments the electrodes were regulated by hand, the voltage was 110 and the tap temperature was about 2650 degrees Fahr. No calcium carbide difficulties were encountered. One man discussing the paper said that it now became an economic study to determine the use of the new process. He said that many cases undoubtedly exist where it will be an advantage to make pig iron from steel scrap. For success the process requires a sufficient quantity of low-priced steel scrap and availability of low-priced electric power.

A. H. Dierker, research engineer, experiment station, Ohio State university, Columbus, O., presented a paper on reclaiming steel-foundry sands. Study of the condition of sands in a steel foundry developed the fact that the grains in contact with the metal are the only ones broken up to any noticeable extent leaving a large per cent of unharmed grains.

Sand Separation Method Described

He described a method of separating the good sand from refuse. The apparatus is now in successful operation at the plant of the Buckeye Steel Castings Co., Columbus, O. A typical weeks operation of the apparatus showed over 500 tons of refuse sand treated and 85 per cent good sand recovered.

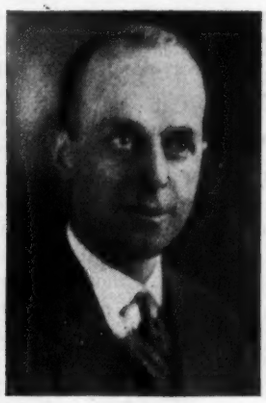
Influence of nitrogen on special steels was discussed at various times throughout the different sessions and was the subject of a paper by Shun-Ichi Satoh, Mitsubishi, research laboratory, Tokyo, Japan, presented at the Thursday session. The work of Mr. Satoh is still incomplete but the paper described tests of striking significance. Mr. Satoh tested special steels containing chromium, aluminum, titanium, manganese, zirconium, molybdenum, tungsten and uranium with ammonia at 580 degrees Cent., and at 560 degrees Cent. He found that aluminum and titanium gave the hardest layers and he presented tables showing the result of his different tests. Dr. Albert Sauveur presented a paper by himself and C. H. Chou, formerly with the National Tube Co., Lorain, O., and now in China. This described elaborate tests made at Harvard university, Cambridge, Mass., to determine the influence of rate of cooling on dendritic structure. The experiments were with com-

(*Concluded on Page 76*)

Achievements in Metallurgy Win Medal Awards

James Aston

John Van Nostrand Dorr



William S. Unger

—Bachrach Photo

THE James Douglas medal, presented annually for distinguished achievement in nonferrous metallurgy, was awarded to John Van Nostrand Dorr, president, Dorr Co., New York, in recognition of his development of the Dorr classifier, the Dorr thickener and his successful application of these to the beneficiation of ores. James Aston, professor of mining and metallurgy, Carnegie Institute of Technology, Pittsburgh, received the Robert Woolston Hunt medal for his paper on "A New Development in Wrought Iron Manufacture," read before the iron and steel division meeting in Cleveland last September. The J. E. Johnson Jr. award was made to William S. Unger, superintendent, Carrie furnaces, Carnegie Steel Co., Pittsburgh, in recognition of his blast furnace research work.

Blistering of Enameled Castings Caused by Surface Layer

Carburized Skin on Gray Iron Cast ings Should Be Removed To Enamel Successfully, Ceramists and Refractory Interests Are Told

MORE than 1500 delegates and guests attended the combined meeting of the American Ceramic society and the American Refractories institute held at the Royal York hotel in Toronto, Ont., Feb. 16-20. In an opening address before the society, President George A. Bole, presented plans for the current meeting and for the work of the society during the coming year. The former included a tentative plan for reclassification of membership in the society, a proposal whereby special "fellowship memberships" are to be created for the members in the scientific groups.

The outstanding feature of the enamel division program was a paper by R. A. Weaver, president, Ferro Enamel Supply Co., Cleveland, entitled "Porcelain Enameling in 1935—A Question and an Answer," in which the speaker presented a plan for nationally advertising porcelain enameled products, or, in other words, a plan for creating a greater demand for enameled objects.

Studies Blistering Cause

Among the several papers read in the meeting of the enamel division of the ceramic group was one dealing with the blistering phenomena in the enameling of cast iron. Authors of the paper were A. I. Krynitsky and W. N. Harrison, bureau of standards, Washington. Physical defects in castings, including sponginess, as well as faulty composition or application of enamels will cause blistering to appear. A gray iron casting in freezing acquires a thin surface skin or "microchill" of varying thickness and hardness. The authors claim that the removal of this fine skin will obviate the formation of blisters since blisters in themselves are attributable to the breaking down of the combined carbon in this outer microchilled layer and oxidizing into CO and CO_2.

One of the features of the program was an address by Arthur J. Tuscany, manager, Gray Iron Institute Inc., Cleveland, who spoke on "Important Developments in the Gray Iron Industry." Mr. Tuscany traced the introduction of modern mass production methods into the foundry and pointed out how quantity production is being maintained in foundries without any sacrifice of craftmanship or quality, in fact, with a recognizable improvement in accuracy and an increase in wages with lower costs per unit. Careful control of metallurgical and chemical details has been an aid to the gray iron foundrymen as well as new mixtures of steel and alloys which impart improved qualities to gray iron castings.

Super Refractories Used

Robert Kirkpatrick, Norton Co., Worcester, Mass., related some "Experiences with Fused Alumina and Silicon Carbide Refractories in the Enameling Industry," reviewing the properties and numerous advantages of these super refractory materials.

An interesting element of the refractories division program was the formation of a new committee for the investigation into new research and experimental problems. A complete report by the chairman of the committee will be made available soon through the American Ceramic society. Interesting papers given at the refractories sessions included a progress report on the development of an abrasion test for refractories at high temperatures, presented by J. B. Shaw, G. J. Blair and M. C. Shaw, associated with the ceramics department of the Pennsylvania State College, State College, Pa. The method for making the test consisted in moving a steel chisel point back and forth over the faces of the bricks clamped together. Eleven bricks were tested simultaneously. The chisel was actuated by means of a jack hammer and was water-cooled. The blow delivered varied in intensity from 6.5 pounds at the beginning of the test to 13 pounds under the most severe conditions.

Two inter-related papers were presented by R. E. Birch, engineering experiment station, Ohio State university, Columbia, O., dealing with dry-pressed refractories. The first paper considered the effect of variation in forming pressure on the properties of green brick; the second detailed the changes in spalling and other fired properties as affected by variation of forming pressures. Cold crushing strengths of fire brick were investigated by H. K. Mitra, bureau of standards, Columbus, O., who reported on his findings, attempting to show some relation between values obtained for crushing strengths of fire brick in one direction and data obtained for strengths in other directions. No simple mathematical relationship was found, however. Stephen M. Swain, refractories fellowship. Mellon institute, Pittsburgh, reported on the effect on fire clay refractory material of proportioning or grading the grain sizes of flint clay in the refractory. "Refractory Clay Deposits of Northern Ontario," was the title of a paper read by W. S. Dyer, department of mines, Ottawa, and R. J. Montgomery, University of Ontario, Toronto.

New Officers Are Named

It will be recalled that last year the refractories division of the American Ceramic society was affiliated with the American Refractories institute. The 1931 meeting of the two bodies will be held in Cleveland during the early part of next year. In connection with the meeting, a national exposition of all ceramic wares, raw materials and machinery will be held. American Ceramic society officers appointed for the 1930-1931 term are as follows: President, Brig. Gen. Edward Orton Jr., Standard Pyrometric Cone Co., Columbus, O.; vice president, Paul E. Cox, head of ceramic engineering department, Iowa State college, Ames, Iowa; treasurer, H. B. Henderson, Standard Pyrometric Cone Co.; and general secretary, Ross C. Purdy, 2525 North High street, Columbus, O.

West Coast Metal Industries Find Co-operation Is Profitable

Iron, Steel and Allied Trades of California Meeting in Del Monte for Sixth Annual Conference Plan Expanded Activities

METALWORKING industries of the Pacific coast, working together on a basis of constructive, co-operative effort, are witnessing the solution of many problems previously held impossible of solution. The sixth annual conference of the Iron, Steel and Allied Industries of California, conducted at Del Monte, Calif., Feb. 13-15, under the auspices of the California State chamber of commerce, reviewed with satisfaction the accomplishments of the previous conferences and undertook a more expansive program for 1930. Increased activity in the work of the organization was evidenced by the conference attendance which outnumbered all former gatherings. Over 200 executives, closely identified with the steel industry on the coast, were present and more eastern mills were represented than in 1929.

Meetings of the groups this year, composed of structural steel fabricators, manufacturers, merchant steel jobbers, traffic men, steel mills, reinforcing steel bar jobbers, foundries and purchasing agents, were held on the evening of Feb. 13 and were devoted to their special problems.

Present officers were re-elected unanimously to serve another year. They are as follows: Chairman, J. E. Webster, general manager, Ducommun Corp., Los Angeles; vice chairman, Ray M. Alvord, General Electric Co., San Francisco; secretary, Charles S. Knight, industrial manager, California State chamber of commerce, San Francisco. The next annual meeting will be held at Del Monte, Feb. 12-14, 1931.

Would Make and Market More Steel in West

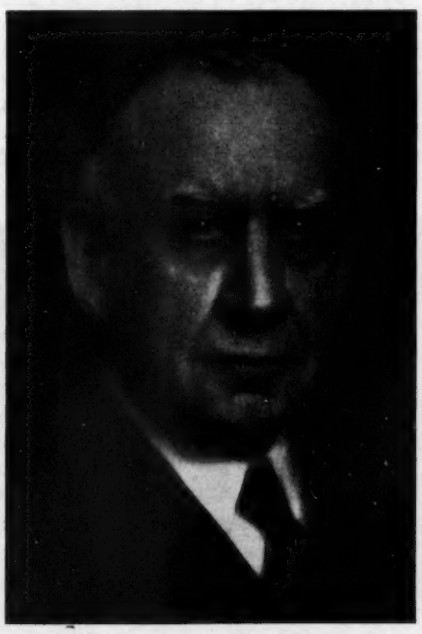
FIVE major objectives for adoption during the year, a program of expansion, co-operation and economy were recommended by Chairman J. E. Webster in his introductory remarks at the opening session of the conference. The five objectives were summarized as follows:

1. To further the present program of simplified practice and elimination of waste as recommended by the department of commerce.
2. To foster extension of trade territory in the western states.
3. To promote greater consideration for domestic products in California.
4. To recommend the application of the principles of federal trade practice to the various groups of the industry for the purpose of assisting better self government within the different groups.
5. Closer co-operation between the technical groups of architects, engineers and contractors with public and private construction activities.

Western Steel Industry Important

Mr. Webster stated that the iron and steel industry on the Pacific coast represented 20 per cent of the industrial structure of the section and that it was therefore imperative that the iron and steel industry keep its house in order and thus contribute to the balanced prosperity of the coast and maintain its position in the front ranks of industrial progress.

"It is evident," he said, "from the experiences and accomplishments made possible through co-operative effort initiated at our Del Monte conference that many of the problems of our industry, which we thought were impossible of solution, may be successfully worked out on a basis of constructive, co-operative effort."



A. T. DeFOREST

Who made first public statement regarding Steel corporation policy on Pacific Coast. He is vice president, United States Steel Products Co., Columbia department, San Francisco

Important objectives achieved during the past year, Mr. Webster stated, included the reduction of freight rates, to the interest of western industries, on six items out of nine protests filed and the contracting of 38 projects, involving both public and private contracts, asking for consideration in support of domestic products and resulting in contracts being awarded to petitioning California industries in 26 instances.

Los Angeles Needs Building Code

William Simpson, president of the Simpson Construction Co., Los Angeles was the first speaker on the program. Among the important things he brought to the attention of the conference was the necessity for a building code for the county of Los Angeles. He pointed out that the city of Los Angeles had a building code limiting the height of structures, whereas there were no restrictions as regards height in the county, although the

city surrounded the county property in a number of instances.

Continuing Mr. Simpson said, "The total steel market of the Pacific Coast states and British Columbia is estimated at 2.500,000 net tons, of which only about 400,000 tons are now produced on the Coast." In breaking down this tonnage into various classifications, he stated that bar tonnage amounted to 450,000 tons of which 60 per cent was made on the coast, that tin plate aggregated 425,000 tons, 10 per cent of which was produced in the west, that structural steel and sheets totaled 225,000 tons and 175,000 tons, respectively, of which 20 and 30 per cent, respectively, were rolled on the Pacific coast. He stated that rails consumed amounted to 200,000 gross tons and that plates and pipe, including seamless tubes, totaled 175,000 and 400,000 tons, respectively, none of which was produced in the west. The balance, between 300,000 and 400,000 tons, Simpson said, was distributed over miscellaneous classifications of steel products.

Waste Elimination Work Progresses

C. M. Gunn, president, Gunn, Carle & Co., San Francisco, and northern California, chairman of the simplified practice committee of the California State chamber of commerce, which late last year was appointed to represent the United States department of commerce on simplified practice in California, told the conference that over $300,000,000 annually already had been saved by the important work on elimination of waste instigated by the department of commerce.

Mr. Gunn outlined the steps being taken by the committees in California and stated that regular meetings were being held composed of committeemen representing 11 groups of business and industry, five of which were identified directly with the steel industry. He said, "Definite objectives have been set up for 1930 and the groups both in the south and in the north will deal with the same objectives, thus assuring statewide action on all items considered."

J. E. WEBSTER

Re-elected chairman of the Iron, Steel and Allied Industries of California. He is general manager, Ducommun Corp., Los Angeles

Frederick J. Koster, president, California Barrel Co., San Francisco, addressed the meeting on the topic "California Industrial Progress." In summing up the work that had been accomplished by the conference during the past five years he concluded by saying, "We are on the right track and we have established a solid foundation upon which to build our iron and steel structure in California. The construction program definitely in prospect for California during the coming year is already far ahead of the actual building done in 1929."

Charles F. Abbott, executive director, American Institute of Steel Construction, was the first speaker on the program for the second day of the conference, Feb. 14. Mr. Abbott was to have spoken on "Trade Practice Codes as Developed in Conferences with the Federal Trade Commission" but at the last moment talked on the more vital and pertinent subject of price cutting. He pointed out that the future prosperity of industry as a whole and the steel industry in particular depended upon the adherence to the one-price policy and the development of new markets through efficient and energetic research.

The last speaker on the program, A. T. DeForest, vice-president, United States Steel Products Co., presented a message of unusual importance to every one connected with the steel industry on the Pacific Coast. The trade generally has been looking forward to the first public statement of what the policy of the Steel corporation was to be, following the actual taking over of the properties of the Columbia Steel Corp. on Feb. 1, 1930.

Many Delegates Attend

Commenting on the unusually large number of delegates in attendance at the conference, representing the varied industries and trades of the state of California, which he believed was indicative of keen interest and also an expression of belief in the worthiness of the accomplishments of the California State chamber of commerce and remarking on the display of cordiality among the attendants, evidencing a desire for co-operation in the iron and steel industries, Mr. DeForest said, "Such a desire is most commendable and experience has taught us that orderly constructive work is both educating and essential toward the main-

More than 200 executives closely identified with the iron, steel and allied industr[illegible] the

tenance of fair and prosperous business conditions. He continued:

"The steel manufacturing industry in California and other western states has recently experienced changes in ownership and an opportunity is presented, greater than ever before, for a leadership to be taken by these Pacific Coast steelmakers in the adoption of policies that should lead to a co-operative service in the interest of the recognized distributors of steel products; also in the service of the growing varied industries in Pacific Coast territory. With that opportunity before them it remains for the producers, distributors and fabricators of steel products in this territory, to adopt a constructive program and a more uniform business selling policy and the maintenance of selling values that will bring a fair return on capital invested, quality of product and for service rendered.

To Help Conditions

"You will agree that conditions in this regard, throughout this territory, have been unsatisfactory and warrant prompt correction and it seems to me that these conditions can be rectified if considered unselfishly and with an honesty of purpose and with the spirit of the Golden Rule.

"Are we willing to accept this opportunity? Have we the good sense to see the necessity of calling a halt in the varied and ulterior practices that have at such frequent intervals resulted in price upheavals and bitter price competition—at times long lasting—all resulting in unprofitable business, together with possible bitterness in our personal relations?

"I believe it to be the desire of Pacific Coast steel manufacturers to make the distribution and use of their products profitable to merchants and consumers and where that disposition is displayed by the producer, I believe it to be to the interest, and the obligation of the distributor and consumer of those products, to patronize, and thus maintain the fullest possible operation of the Pacific Coast producing plants.

"The relation of the larger Pacific Coast steel producers, with eastern producing capacity, is such that a fair policy will naturally apply in connection with their eastern mill products in the Pacific Coast territory.

CHARLES F. ABBOTT

A principal speaker at the Del Monte conference last week. He is executive director, American Institute of Steel Construction Inc., New York

The Pacific Coast steelmakers cannot consistently be hostile to sharing with other American manufacturers a fair portion of the Pacific Coast steel tonnage at fair market prices. There appears to be no increase in the importation of foreign steel productions; in fact, in some commodities there is a diminution of imports. The matter of importations should not be disturbing to us. The foreigner is entitled to a distribution of some of his tonnage in the large American market—the same as in other markets of the world, and as we are seeking the distribution of American products internationally. The great difficulty has been that buyers who have imported have reflected their cost advantage in the selling price to the disadvantage of other American distributors and fabricators—in short, have used their cost advantage to the end of buying business. So long as that policy continues your secondary market will be disturbed and it should not be allowed to continue.

"The Pacific Coast steel mills are an important factor in your territory, as they have made large investments and are employing many thousands at liberal wage rates, thus building up a buying power in your community. That must not be overlooked, for it is buying power that is the backbone of business as a whole.

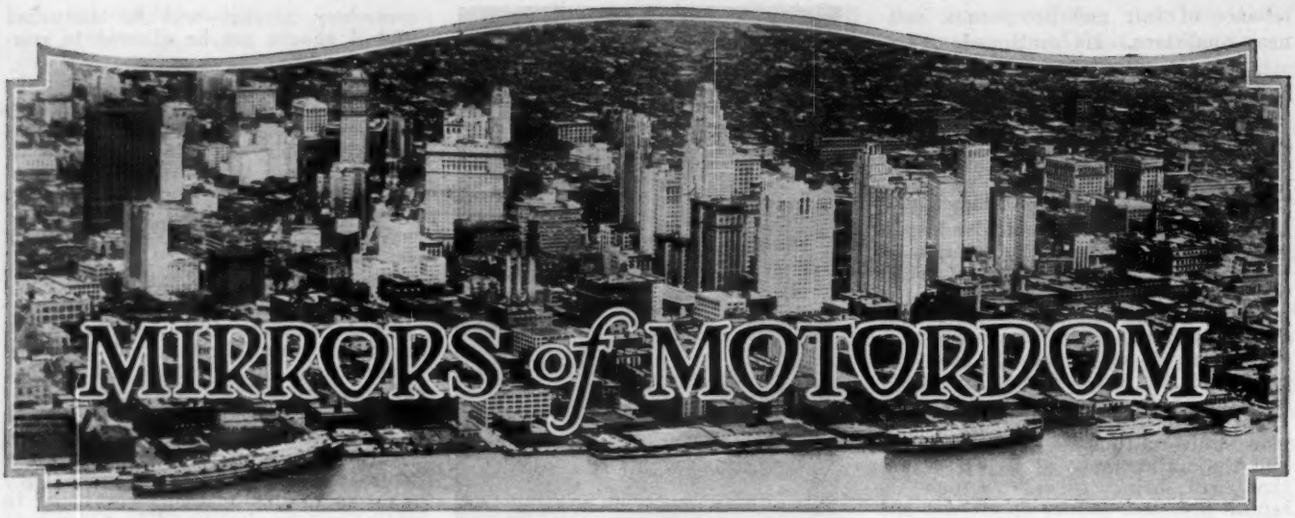
"It would be the policy of the company which I have the honor to represent to operate these Pacific Coast plants to the fullest extent that the business of the territory will permit of, thus affording steady employment to the workers. We expect further to improve our recently acquired properties, adding to equipment and further diversify lines of product. We plan doing this based on our belief in this Coast territory and in a constant growth of demand for our products, which seems assured by the increasing population throughout the west, also, in the continued growth of diversified industrial operations, in California in particular.

Business Prospects Good

"The current year, we believe, offers good opportunity for a fair volume of business in the United States as a whole and we believe the opportunities on the Pacific Coast are equally indicative of a fair volume of business, which business, if done on a basis of sense and morale, will bring to us a gratifying return for the year 1930."

The conference adopted a number of resolutions dealing with state-wide leadership and co-operation; standardization and simplified practice; extension of marketing territory; development of markets for domestic products; co-operation of purchasing agents; and co-operation of technical groups of architects, engineers and contractors. The latter resolution contained an invitation for the technical groups of architects, engineers and contractors to be represented in the conference.

...n the Pacific Coast attended the sixth annual conference at Del Monte, Calif.



Auto Production, Geared to Actual Sales, Drags

* * * * * * * * *

Costs Up, Steel Buyers Look to Water Shipments

Detroit, Feb. 25

CONFIDENCE in the long pull for the automotive industry is preventing sentiment among its material suppliers from being swamped by discouraging developments.

Production of automobiles in the last half of February is showing a fractional decline from the first half, although the month doubtless will record some improvement over January. Some important makers have curtailed their schedules and others have shortened their work week.

Slightly less steel is moving into Detroit than early in February, due in part to holdups. Specifications for material for March delivery are narrower than a fortnight ago; indeed, some issued then have been suspended temporarily.

* * *

APPARENTLY leaders of the industry meant it when they said, early in January, that in 1930 they would produce only such cars as retail sales warranted, and would not force large quotas upon dealers.

At least, having met dealers' requisitions for stock, they are showing no hesitancy in scaling down their operations and barely maintaining steerage way. There seems to be a general determination to hold down production until spring retail buying opens up.

Majority sentiment at this time is that the current drag will continue into March—possibly into the last half. There seems to be a widespread feeling that April 1 will bring a determination of the remainder of the year.

* * *

INEVITABLY the situation is spotty, and some producers of steel can chart a steady rise in specifications since the first of the year. Flat-rolled steel sellers report a more unstable condition than producers of bars, wire and pig iron. The almost total absence of structural steel demand is especially depressing to the small fabricating shops.

The broad, general view is that the situation is more healthy than a year ago, and that a steady though slow rise in automobile assembly in the first half year will lead to a last half better than in 1929.

Compared with 1927 and 1928, current schedules appear normal. It is the lush first half of 1929 that makes this year to date seem dull. January output of passenger cars and trucks in the United States, officially given as 273,089, is lower than the 401,037 of last January but compares with 231,728 in 1928 and 238,927 in 1927. February output is now estimated at 315,000 units, compared with 466,418 last February, 323,379 in 1928 and 304,763 in 1927.

* * *

FORD has overtaken Chevrolet. Current motor production at Fordson is about 6000 on a 5-day week basis, although a surplus of motors accumulated in January puts the current assembly rate above 7000 daily.

Chevrolet, on a 5-day week, is averaging 4000 units daily. It expects this month to duplicate January's total of about 85,000. Chevrolet has piled up a good surplus of parts at its gear, forge and axle plant in Detroit, and the Fisher Body plant at Cleveland has suspended for this week receipt of Chevrolet body materials.

Chevrolet's probable production of 85,000 units this month compares with 121,200 last February. Ford's 98,000 units in January (including about 10,000 assembled abroad) should swell in February to about 120,000, contrasted with 126,000 last February. These latter Ford statistics also include foreign assemblies. April is designated as the big Ford month.

* * *

HUDSON-ESSEX scheduled steel for a 1750-unit rate late in February but is at 975 daily and has suspended specifications proportionately. The last three days of last week and the first three of this week operations were practically suspended.

Buick, on a 5-day week, is doing 450 daily and expanding its specifications. Dodge, on a 5½-day week, is assembling 400 daily. Other Chrysler units are on a 4-day week, DeSoto doing 225 a day and Chrysler-Plymouth 250.

Other daily schedules, mostly based on a 5-day week, are: Willys-Overland, 500; Oakland-Pontiac, 600; Olds, 350; Graham, 200; and Cadillac, 70.

* * *

WHILE automobile manufacturers with great fortitude have attuned their operations to current retail demand and have effected marked

economies through deflated labor and executive staffs, nevertheless they see increased overhead per car inevitable, at least in the first half year.

This may account for increased pressure on material prices and more numerous inquiries concerning water shipments this season. Buyers expect to benefit from the lower water rates, and lakefront producers in 1930 may enjoy greater preference than ever before.

The interstate commerce commission decision ordering a mileage scale for railroad freight rates effective May 20 will bring reductions but not materially disturb the relationships of Pittsburgh, Cleveland and Chicago.

* * *

THE impression is general that water competition between the Buffalo and Chicago districts will be intensified this summer. The water rate from Buffalo is roughly half the all-rail rate of 26.5 cents per 100 pounds on finished steel, while the water rate from Chicago is about 15 cents, against an all-rail rate of 27.5 cents.

Sheets moved to Detroit last year from the Youngstown district to Cleveland—a 9½-cent haul—and thence by water to Detroit cheaper than the all-rail rate of 26.5 cents, and this movement may expand this year. Sheet bars will come by water from Cleveland and Chicago to the Newton mill at Monroe and the Michigan steel mill at Ecorse.

An authority on scrap looks for a decline in lake traffic this year. The dock accumulation for shipment to Buffalo is smaller than a year ago, one Lake Erie mill has a demurrage charge of $10,000 still hanging over from last season, while the six open-hearth furnaces at the Great Lakes Steel Corp. plant should consume 25,000 to 40,000 tons of melting steel bundles and turnings a month after midsummer.

* * *

NOT to bring an indictment but to relay an impression, the feeling in Detroit toward Henry Ford appears less cordial.

Concerning the recent advance in hourly wage rates there is widespread cynicism. It is generally understood that fewer men now get the higher brackets and that experienced men after being laid off are rehired to do the same work at the same or a lower rate.

Ford's comparatively low labor cost per unit is attributed to the repetitive system whereby mechanics or tradesmen in the old sense of the term are largely eliminated. This is contrasted with Mr. Ford's recent announcement he will devote $100,000,000 and the rest of his life to the education of youths, presumably along mechanical lines.

Ford pressure on material prices never has been greater. This applies as well to material purchased by his parts suppliers. Extra lists have been scanned recently to unearth weak spots and efforts to break down some of these are under way.

* * *

NOT even the most ardent Detroit booster expects the Detroit river to become to the steel industry what the south shore of Lake Michigan and the Mahoning and Monongahela rivers are today, yet steel is getting a distinct hold on the 40 miles of river front down to Monroe.

On the west bank, going south from Detroit, are the two stacks of the Hanna Furnace Co., the open hearths, strip and bar mills of the Great Lakes Steel Corp., the sheet mills of the Michigan Steel Corp., and the new sheet mills of the Newton Steel Co. at Monroe. Between the Michigan and Newton plants, in the vicinity of Trenton, is the 200-acre site upon which the American Rolling Mill Co. some day may erect a plant.

On the east or Canadian side of the Detroit river just south of Detroit is the vast site of the United States Steel Corp., with its partially-completed stacks started during the war, the corporation's Canadian wire plant and the new tin plate plant now in process of construction. A few miles in from the Detroit river are the two blast furnaces, 13 open hearths and the by-products coke plant of the Ford Motor Co. The Semet-Solvay by-product ovens also fit into the picture.

George R. Fink, president of the National Steel Corp., of which the Great Lakes Steel Corp. is a subsidiary, estimates that in 1928, when automotive production was 25 per cent under that of 1929, Michigan consumed 2,343,000 tons of steel exclusive of rails. Of this, 870,000 tons was sheets, 722,000 tons bars and 131,000 tons shapes.

* * *

ONE new use of steel breeds another. A pioneer in the all-steel automobile body field is the Edward G. Budd Mfg. Co., which in 1929 in its Philadelphia plant alone consumed 140,464 tons of steel sheets. To retain the goodwill both of the automobile manufacturers using its bodies and of ultimate purchasers of them, the Budd company has appointed over 500 authorized Budd body service stations. In the selection of these stations, adequate equipment for welding was a prime requisite. Simple repair tool sets have been devised and a complete stock of steel parts and stampings provided at Detroit.

* * *

EXPERIMENTS have been conducted recently by a sheet mill on the use of wide hot strip to eliminate the breakdown of sheet bars, but not with sufficient success to warrant its adoption at this time. The cost of No. 14 gage strip 48 inches in width—the gage and size offering the greatest possibilities—is said to differ little from sheet bars at the breakdown, and the savings in seconds and wasters are not adequate to tip the scale in favor of strip.

* * *

THAT there's nothing in a name seems proved by the fact that top builders are at the bottom of the automotive industry's payroll. Federal department of labor statistics for 1928, just issued, reveal top builders average 46.8 cents per hour, lower than any other classification save common labor and apprentices. Ding men, who do the final touching-up on bodies before they are lacquered, are the highest paid, at $1.128 hourly. Compared with 1925 and 1922, hours of automotive labor are little changed but hourly rates have risen. Following are government figures for 1928 on labor classifications in the automotive industry which are similar to those in iron and steel:

Occupation	Average full-time hours per week	Average earnings per hour, in cents
Apprentices	48.6	57.2
Automatic operators, lathe and screw machine	49.0	80.6
Bench hands, machine shop	50.3	72.4
Do, female	49.3	53.8
Blacksmiths	48.9	97.3
Boring mill operators	47.3	80.8
Crane operators	49.3	70.7
Die setters, sheet metal	47.4	84.9
Drill press operators	49.6	73.4
Do, female	50.3	45.7
Forge shop helpers	50.7	73.5
Gear cutter operators	49.5	76.0
Grinding machine operators	48.8	79.2
Do, female	50.3	97.3
Laborers	49.4	58.9
Do, female	49.5	46.5
Lathe operators	49.0	78.9
Milling machine operators	49.5	76.4
Planer and shaper operators	49.1	79.1
Punch press operators	47.9	74.6
Do, female	51.3	49.1
Sand blasters	48.7	72.7
Sheet metal workers	50.5	80.7
Do, female	49.6	48.9
Welders and brazers	47.6	85.2
Welders, spot and butt	49.5	78.9
All occupations, male	49.4	75.6
Do, female	50.3	48.7

* * *

SALVAGE operations at most automotive plants are accorded equal rank with close buying. Practically all plants now are briqueting cast iron borings, usually for melting in their own cupolas, which has resulted in a marked contraction in the market for automobile cast scrap.

Hudson-Essex in a normal month puts 60 to 75 cars of machine shop turnings through its centrifugal

(*Concluded on Page* 104)

Trend in Aircraft Construction Favors All-Metal Types

Numerous Cabin Planes Displayed at Second Annual Exposition at St. Louis Reflects Increased Interest in Air Transportation

SPONSORED by the Aeronautical Chamber of Commerce of America Inc., the second annual International Aircraft exposition, held in St. Louis, Feb. 15 to 23, again proved the increased use of iron, steel and nonferrous metals in airplane construction. Style, color and up-to-date trimming were dominant in the new model planes. The 1930 exposition was held in the Arena, a convention hall recently completed with seating capacity of 22,000 and containing 300,000 square feet of space.

Metals and metalworking equipment were displayed by many exhibitors, fully 80 per cent of the aircraft accessories shown being of metal construction. In the display of planes, the all-metal trend was noted in the larger passenger carrying ships; some of the smaller models also inaugurated all-metal construction. Ford Motor Co., Detroit, and Lenert Aircraft Co., Pentwater, Mich., exhibited this type of equipment. A Ford trimotor plane built for H. H. Timken, president, Timken Roller Bearing Co., Canton, O., was one of the largest planes seen at the show.

Many Models Displayed

Exhibitors of aircraft, accessories and allied products whose exhibits were valued at $2,500,000 totaled 183. Of these, 45 were plane manufacturers showing 85 models and two gliders. Manufacturers of metal parts and accessories numbered 80 of which there were 17 manufacturers of engines. The remaining exhibitors consisted of nonmetal equipment manufacturers, transport companies, etc. Planes shown ranged from the "baby" type with overall length of 16¾ feet, priced at $975 to the Curtiss Condor with 100-foot wing spread and costing $85,000. The now popular use of air transport ships in passenger carrying trade was reflected in the large number of cabin planes displayed.

Distribution of aircraft manufacturing throughout the country as shown by exhibitors at the show reveals that Michigan led in that field. New York, which has held the leading position at most shows, was second with Kansas close behind. California and Missouri were tied for fourth place. The standing by states follows: Michigan, nine; New York, seven; Kansas, six; California and Missouri, four each; Ohio, three; Pennsylvania and Illinois, two each; and Arkansas, Delaware, Indiana, Massachusetts, Nebraska, New Jersey, Oklahoma and Minnesota one each.

Accessories Are Exhibited

New York led by a wide margin in manufacturers of metal parts and accessories for aircraft, having nearly twice as many concerns represented as its nearest competitor. These exhibitors in the order of their standing were as follows: New York, 21; Pennsylvania, 12; Ohio, ten; Missouri, six; Michigan, New Jersey, Illinois and Massachusetts five each; California and Indiana, three each; Connecticut, two; and Maryland, Minnesota and Wisconsin one each.

Second only to the exhibition of aircraft was the showing of aircraft engines, this being the largest display in the parts and accessory field. The 17 manufacturers of engines displayed 85 models, all big factors in the use of metal in the aircraft industry. Among the various engine builders represented by exhibits at the show were Axelson Aircraft & Engine Co., Los Angeles; E. W. Bliss Co., Brooklyn; Continental Aircraft Engine Co., Detroit; Comet Engine Co., New York; Dayton Airplane Engine Co., Dayton, O.; Lambert Aircraft Engine Co., Moline, Ill.; LeBlond Aircraft Engine Co., Cincinnati; Lycoming Mfg. Co., Williamsport, Pa.; Michigan Aero Engine Co., Lansing, Mich.; Pratt & Whitney Aircraft Co., Hartford, Conn.; Western Enterprise Engine Co., Los Angeles, and Wright Aeronautical Corp., Paterson, N. J. New companies exhibiting included the Chevrolet Aircraft Engine Co., Baltimore, and Light Mfg. & Foundry Co., Pottstown, Pa.

Exhibitors of engine parts were fairly numerous, those showing forgings including Endicott Forging & Mfg. Co., Endicott, N. Y., who featured steel drop forgings, Bethlehem Steel Co. Bethlehem, Pa. with a general line of forgings, bolts and nuts, and Wyman-Gordon Co., Worcester, Mass. Aluminum motor specialties, such as pistons, cylinder head castings, etc., were displayed by Bohn Aluminum & Brass Corp., Detroit, and Aluminum Co. of America, Pittsburgh. Gears and precision parts were exhibited by Indianapolis Tool & Mfg. Co., Indianapolis. Bearings of all kinds for aircraft were displayed by Timken Roller Bearing Co., Canton, O. Ignition equipment was displayed by Stromberg Motor Devices Co., Chicago, and Champion Spark Plug Co., Toledo, O.

Steel tubing, cables and bracing materials for aircraft framework were shown by Bethlehem Steel Co., Bethlehem, Pa.; Summerill Tubing Co., Bridgeport, Pa.; MacWhyte Co., Kenosha, Wis.; John A. Roebling's Sons Co., Trenton, N. J., and Stewart Hartshorn Co., New York. Metal hose and tubing were on display by Breeze Corp., Newark. All-metal cowls for engines and samples of metal stamping equipment were exhibited by Buhl Stamping Co., Detroit. For seaplanes, an all-metal float was displayed by Edo Aircraft Corp., College Point, L. I., N. Y.

Wheels and Brakes Shown

Bendix Aviation Corp., Bendix Brake Co. division, South Bend, Ind., showed a number of airplane wheels and brakes. Cleveland Pneumatic Tool Co., Cleveland, featured special landing struts of shock absorber type, as did Russell Mfg. Co., New York, which showed safety belts. Special shock absorbing springs were demonstrated by Gruss Air Spring Co. of America Ltd., Los Angeles. Manufacturers of inside plane fixtures ex-

hibited products giving a more elaborate effect to cabin interiors. Dayton Mfg. Co., Dayton, O., featured a line of airplane hardware such as might grace the finest limousine. Metal panel products were shown by Haskelite Mfg. Corp., Chicago, and lighting equipment by B. B. T. Corp. of America, Philadelphia, and Crouse-Hinds Co., Syracuse, N. Y.

Miscellaneous Equipment Exhibited

Manufacturers of machinery and machine tool equipment for aircraft were represented by Black & Decker Mfg. Co., Towson, Md.; Hall & Brown Woodworking Machine Co., St. Louis, and Tubular Rivet & Stud Co., Boston, the latter exhibiting a line of automatic setting machines for tubular and split rivet work. Supply companies such as Aero Supply Mfg. Co., College Point, L. I., N. Y., exhibited screw machine products, and Johnson Airplane & Supply Co., Dayton, O., showed a line of aircraft manufacture and repair machinery. Welding equipment was exhibited and demonstrated by Air Reduction Sales Co., New York; Imperial Brass Mfg. Co., Chicago, and Linde Air Products Co., New York. Imperial Brass Mfg. Co. also displayed aircraft lavatory equipment.

Hangars and hangar equipment was shown by Austin Co., Cleveland, and H. H. Robertson Co., Pittsburgh. Electric equipment pertaining to lighting of hangars and airports was displayed and shown in actual operation by General Electric Co., Schenectady, N. Y.; Packard Electric Co., Warren, O.; Pyle-National Co., Chicago, and Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Western Electric Co., New York, featured a line of aviation communication apparatus. Radio Marine Corp. of America, New York, showed aircraft radios.

Numerous business and technical sessions were held in connection with the exposition, under the auspices of the Aeronautical Chamber of Commerce of America Inc. and the Society of Automotive Engineers. The eliminating of noise in airplane motors, the use of radio in aircraft communication and the uniform marking of all airways and stations were some of the subjects discussed. Engineers attending the show agreed that the airplane of the future will be of all-metal construction in order to be highly developed along lines of safety, as is the steel railroad car over the old type.

Tool Builders Regulate Show Participation

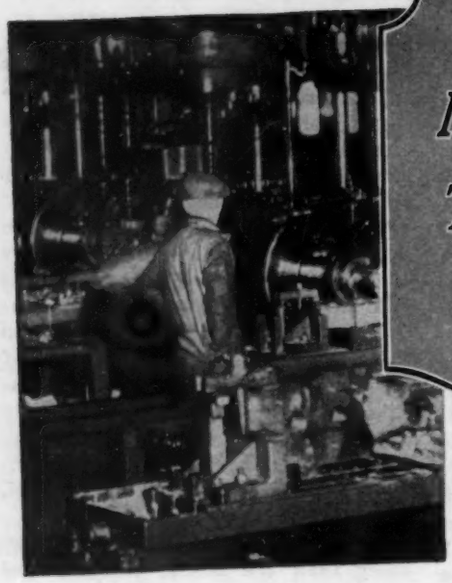
Disbarment from machine tool expositions will result for members of the National Machine Tool Builders' association who exhibit in any show or exhibition which has not been sanctioned previously by the association, according to action taken Feb. 17 at the meeting of the board of directors of the tool builders' association. This is in line with a rule established some time ago by the national automobile chamber of commerce governing exhibition in national automobile shows. This body passed legislation barring an exhibitor from officially sanctioned shows for a period of 18 months after the infraction of the rule forbidding exhibition in any show not approved by the chamber.

The effective date of the resolution as passed by the board of directors of the tool builders' association is Feb. 17. However, in the final regulation, a longer interval of exclusion from exhibitions after infraction of the rule will govern, since the machine tool expositions are held only once every three years. The interval, 18 months in the case of the automobile group, probably will be extended to 40 months for the tool builders.

Sanction will be given to shows other than the official machine tool exposition, as it is recognized that some machines, having limited applications, are exhibited properly in shows catering to a limited class of users. The board of directors can be expected to be guided largely by the opinions of the group of members building the particular type of tool for which sanction to exhibit is asked. Members of the National Machine Tool Builders' association contemplating such exhibits are urged to advise the office of the association as exhibiting in such shows without previous sanction will be considered an infraction of the rule and will bar such participants from exhibition in the National Machine Tool Builders' exposition for the 40-month period.

—Wings Photo Service

View in Arena in St. Louis showing aircraft on display during second International Aircraft exposition



New Machine Tools and Shop Equipment

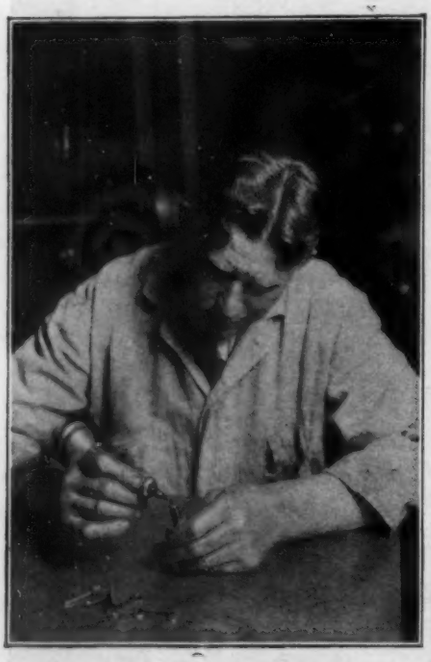
"Magnified and shaped in steel, here is the final energy, the seed that fertilizes space."
—MacKnight Black

Small Air Grinder Built for Precision Work

ITE No. 51

Madison-Kipp Corp., Madison, Wis., recently has announced a new type of air grinder for diemakers, metal pattern makers and similar skilled artisans. The small size and high rotating speed of the tool make it somewhat unique, overall length being 8¼ inches, barrel diameter slightly under 1 inch, and weight 12 ounces. It is operated by compressed air at ordinary shop pressures. In the housing at the upper end of the grinder, a turbine wheel is carried on a spindle. Compressed air, applied by means of a special porting arrangement, provides a spindle speed of 40,000 revolutions per minute. This is equivalent to a surface speed in excess of a mile a minute, even with a ½-inch wheel. The upper bearing is a grease-seal ball bearing and the lower bearing a special bronze. Both are provided with lubrication devices while exhaust air acts to keep bearings cool at all times.

The grinder was developed originally as a tool for diemakers in the production of die castings. As shown in the accompanying illustration, it is held in the hand and used somewhat in the manner that a man uses a fountain pen. The tool has been found valuable for blending radii and for profiling work in irregular cavities in addition to bringing parts requiring accuracy back to shape and size after hardening. A variety of small grinding wheels is available and the entire outfit as prepared for shipment consists of grinder hose, air connections and four grinding wheels.



No. 51—Small air grinder, speed 40,000 revolutions per minute

Welding Machines Light and Compact Units

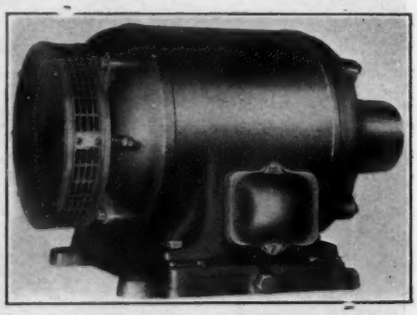
ITE No. 52

Wilson Welder & Metals Co. Inc., Fifteenth and Bloomfield streets, Hoboken, N. J., has placed on the market a 100-ampere welding machine designed to meet the need for a small lightweight arc welder suitable for operation in limited space such as garages and repair shops. The welding machine has a welding range of from 30 to 12 amperes and is said to combine all the major operating features of large capacity machines with light and compact construction. Characteristics show a 50 degree Cent. rise on a 1-hour rating with fixed resistance. Three models are available, electric motor driven, gasoline engine driven and belt driven.

Squirrel-Cage Induction Motor Fan Cooled

ITE No. 53

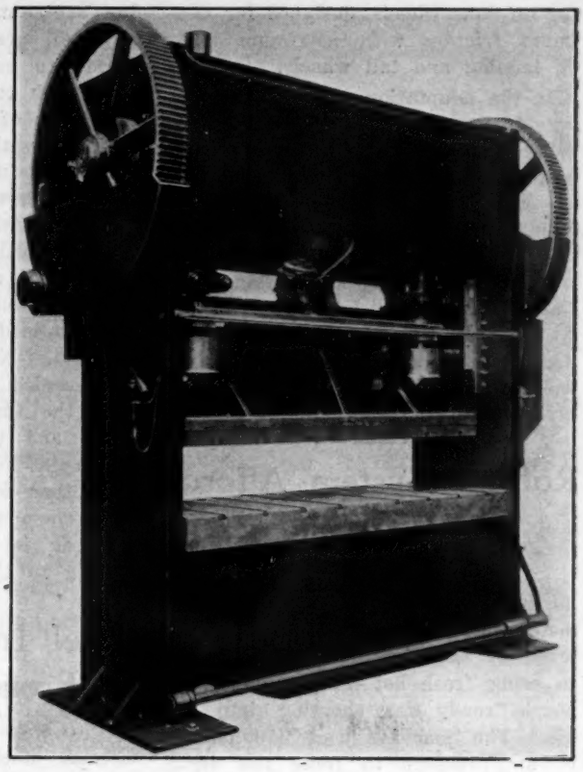
Century Electric Co., 1806 Pine street, St. Louis, recently has introduced to the trade a line of totally enclosed fan-cooled squirrel-cage induction motors, having in most of the ratings the size advantages of a standard open-rated motor plus the added feature of full protection to the stator, rotor and other internal parts. The motor is enclosed completely with ribbed cast-iron coil guards with no rubbing seals or air gaps, all joints being machined fits. As shown in the accompanying illustration, the fan and fan housing are mounted externally on the front end of the motor, opposite the pulley end. The cooling air is drawn in at the pulley end, circulated around and over the rear coil guard, through the air passages between the field core and the frame, out over the coil guard on the front



No. 53—Totally enclosed fan-cooled squirrel-cage induction motor

end and discharged into the air through the fan and fan housing.

Air passages are unobstructed and permit free passage of the cooling air. They do not clog easily and may be blown out with compressed air if necessary. Fan blades are radial, making the motor cooling system equally effective regardless of direction of rotation. Provisions are made to circulate the air within the motor.



No. 54—New all-steel straight side press with bed, overhead, uprights, ram and bull gears all assembled by welding

Straight Steel Sides on Heavy Presses

ITR No. 54

La Salle Machine Works, 3013 South La Salle street, Chicago, announces an addition to its line of all-steel presses, a complete line of straight-side presses with single, double or triple cranks. The accompanying illustration shows one of the new presses. Bed, overhead, uprights, ram and bull gears all are of steel plate construction welded into rigid units resulting in a final assembly considerably less in bulk than if cast iron were used. This style of construction is claimed to permit the presses to be built to meet the most exacting specifications to incorporate the purchaser's own ideas. Any unusual dimensions required may be embodied conveniently. The heavier types include such features as motor adjustment of the ram, flexible rope drive, one-shot lubrication, bronze bushed main bearings, tapered roller bearings in the backshaft bearings and flywheel, multiple-disk friction clutch, and shearing pins in the backshaft to prevent damage to the press through overload or improper die setting.

Ball Bearings for Plane Control Systems

ITR No. 55

Fafnir Bearing Co., New Britain, Conn., is manufacturing a full line of ball bearings designed to fill the needs of airplane control systems. The new line of bearings has been developed to meet the demands for easier and more uniform operating controls, less attention to greasing, fewer repairs and replacements and elimination of jammed or "frozen" controls. In addition to ball bearings for stabilizer adjustment mechanisms, rudder and brake pedal bars, steering wheels and sprockets, stick mechanisms, bell cranks and other control devices, the new line includes ball bearing units

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Bearing	Self-lubricating bronze type	Johnson Bronze Co.	25	Jan. 30	66
Micrometer	Pocket-size dial micrometer; usable as snap gage	B. C. Ames Co.	26	Jan. 30	66
Grinder	28 x 40 x 48-inch plain self-contained type	Cincinnati Grinders Inc.	27	Jan. 30	99
Welder	Automatic welding machine for wire wheel assembly	Lincoln Electric Co.	28	Jan. 30	99
Milling machine	Complete redesign of plain-type machine	Brown & Sharpe Mfg. Co.	29	Jan. 30	100
Sharpener	Full-automatic crosscut and rip saw sharpener	Samuel C. Rogers & Co.	30	Jan. 30	100
Locomotives	Gasoline powered; 20, 25 and 30-ton capacity	Fate-Root-Heath Co.	31	Feb. 6	91
Hone	Vertical cylinder hone; hydraulically reciprocated spindle	Barnes Drill Co.	32	Feb. 6	91
Speed reducers	Right angle drive type; range of 15 to 1 to 518 to 1	Falk Corp.	33	Feb. 6	91
Brake control	For crane hoists, etc.; dynamic, magnetic contactor	Electric Controller & Mfg. Co.	34	Feb. 6	91
Instruments	Voltmeters, milliammeters for low power circuits	General Electric Co.	35	Feb. 6	92
Hardness tester	Motor-driven brinell-type for precision work	Pittsburgh Inst. & Machine Co.	36	Feb. 6	92
Press	Utility press for toolroom; 80,000-pound pressure	Simplex Tool Co.	37	Feb. 6	92
Grinders	Single-speed and multiple-speed types; special design	Ransom Mfg. Co.	38	Feb. 6	92
Nut	Recessed for gasket; makes leakproof joint	Columbian Steel Tank Co.	39	Feb. 6	93
Furnace	Gas-fired laboratory furnace; heats quickly	Babcock & Wilcox Co.	40	Feb. 6	93
Saw	Wood saws; two sizes, for 12x12 and 12x20-inch timber	De Walt Products Corp.	41	Feb. 6	93
Presses	Inclinable; bodies made up of welded steel plate	La Salle Machine Works	42	Feb. 20	59
Controllers	Magnetic controllers for steel mill auxiliaries; redesigned	General Electric Co.	43	Feb. 20	59
Scale	Automatic; for weighing material on conveyor belt	John Chatillon & Sons	44	Feb. 20	60
Milling machine	Also boring and drilling; flexible control	Consolidated Machine Tool Corp.	45	Feb. 20	60
Forming machines	Two types, varying in size, for roll forming strip metal	McKinney Tool & Mfg. Co.	46	Feb. 20	61
Motor-generator	Assembled and welded to welded steel plate base	Reliance Electric & Engineering Co.	47	Feb. 20	61
Chain link	Of manganese steel; for conveyor chain	American Manganese Steel Co.	48	Feb. 20	62
Drive	For bucket elevator; speed reducer and roller chain	H. W. Caldwell & Son Co.	49	Feb. 20	62
Die stocks	Plain and ratchet types; for pipe threading work	Borden Co.	50	Feb. 20	62
Grinder	Small high speed air grinder; weight 12 ounces	Madison-Kipp Corp.	51	Feb. 27	74
Welding machine	100-ampere; gas, electric or belt drive	Wilson Welder & Metals Co.	52	Feb. 27	74
Motor	Totally enclosed, fan-cooled squirrel cage induction motor	Century Electric Co.	53	Feb. 27	74
Presses	Welded assembly; heavy-duty type; all-steel	La Salle Machine Works	54	Feb. 27	75
Bearings	Ball bearings for airplane control systems	Fafnir Bearing Co.	55	Feb. 27	75

for airplane wheels, designed for minimum friction with maximum loads on landing and tail wheels.

In the adaptation of the ball bearings to control systems, cartridges of self-contained seal construction, containing single or double rows of balls, are being made for exposed control points, the self-contained seals being said to eliminate the expense and trouble of designing and making special seals when ball bearings are used. At the same time they provide a more accurate closure, reduce the seal weight and protect bearings in assembly and disassembly.

Routing System Affords Quick Shipment

(*Concluded from Page* 58)

narily is submerged in the molten metal but which is raised with a lever at the time of casting so as to bring fresh hot metal against the nozzle ready for shooting into the die. The machine uses 450 pounds of air pressure to force the metal into the die, and 800 pounds hydraulic pressure to operate the automatic features. The air for cleaning the die after each casting is supplied at 100 pounds pressure.

Many different kinds of metal alloys are used for die casting but the two chief groups are known as the aluminum alloy which requires about 1250 degrees Fahr. in the molten bath, and the zinc alloy calling for 800 to 850 degrees Fahr. Part of the science of die casting is the time element between filling a die and ejecting the cooled casting. The design of the space for the cooling water in the die itself has a direct bearing on the speed of cooling of the casting, and this feature emphasizes the need for close co-operation between the casting department and the die-designing department.

Dies Have Long Life

For small work hand-operated machines are used. In these, hand levers close and open the dies and eject the castings. The hydraulically-operated machines often produce 350 casts an hour. Dies are changed in from 10 to 15 minutes. One die will often stand up successfully during 250,000 impressions.

The so-called cleaning department on the second floor is in reality a finishing and cleaning department. The castings leave the dies with small fins at the parting line. Die construction, which will leave slight fins, is desirable to allow for escape of air at the inrush of the metal. These fins are removed by trimming dies on small presses. The gates sometimes are cut off with power gate cutters or removed with band saws. One end of the cleaning floor is equipped with a variety of machine tools and is used for a certain amount of finishing work frequently specified. The chief work in this section is drilling, although light lathe and shaper work also is done.

In the foundry on the first floor are two oil-fired and three gas-fired furnaces. Near each furnace is a water-cooled ingot mold. The metal from the furnace is taken out with ladles and the molds are filled as shown in Fig. 1. The entire mold plate then is tipped and the ingots slide down a steel apron upon the floor or into containers for transporting to the casting department.

Steel Industry Seeking Broader Research

(*Concluded from Page* 65)

mercial steel and pure steel indicated that dendrites of the commercial steel were larger and more clearly defined than those of pure steel. In discussing this paper, Bradley Stoughton, professor of metallurgy, Lehigh university, Bethlehem, Pa., said that the work of Dr. Sauveur confirmed earlier prophecies that different temperature zones would produce different structures in steel. He said he hoped someone would continue the work and link up strength tests with the structure determination. He spoke of his own work with 1.6 per cent manganese steel which in the light of Dr. Sauveur's work might be considered as an impurity. He told of experiments made by the Port of New York Authority in connection with steel for the Kill Van Kull bridge which resulted in permission to substitute for nickel steel, 1.6 manganese steel in the bridge construction. In the discussion it was stated that excessive dendritic structure made for weaker castings. By annealing, the strength of a high dendritic structure could be improved noticeably but still would remain lower than that of the specimen of low dendritic structure.

A report on tests of rails at elevated temperatures, prepared by John R. Freeman Jr., senior metallurgist, and G. Willard Quick, associate metallurgist, bureau of standards, Washington, was presented by Mr. Freeman. The tests described were conducted in co-operation with railroads and a special study was made of the tensile properties in the temperature range from 400 to 700 degrees Cent. The results showed that the ductility of all rail steels as measured by percentage elongation and reduction of area decreases with an increase in temperature over a portion of this temperature range. This decrease has been termed secondary brittleness.

Those who discussed this paper heralded it as providing a new weapon in the metallurgist's hands. Dr. W. H. Gillett, director, Battelle Memorial institute, Columbus, O., suggested the use of an impact test at high temperatures, made at the mill. G. Willard Quick, co-author of the paper. said that the investigations were just getting nicely under way and that much work was ahead of the bureau in this field. He said he thought the impact test was a good suggestion and that work with such a test probably would be undertaken.

T. S. Fuller, metallurgist, research laboratory, General Electric Co., Schenectady, N. Y., described an elaborate series of tests made to determine the endurance properties of steel in steam. Special equipment was devised for these tests, enabling specimens to be investigated under load while revolving in a steam chamber. Steam at various temperatures and various water contents, was used for the different tests. The results showed a lower endurance limit with nickel steel when subjected to 60-pound steam pressure than in air at room temperature. However, an endurance limit of 65,000 pounds per square inch was obtained with this same steam pressure with specimens of a nitrided steel.

Crystal Development Discussed

N. A. Ziegler, research department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., presented a paper on work of producing large iron crystals using exceptionally pure iron. Fair success was secured in producing specimens of single or at most three or four crystals. The importance of this investigation, as pointed out in the discussion, is that it is frequently much easier to tell something about a large crystal than it is with the more common samples having microscopic grains.

A technical discussion of the iron-silicon equilibrium diagram was presented by Bradley Stoughton, director, curriculum of metallurgical engineering, Lehigh university, Bethlehem, Pa., from a paper prepared by himself and Earl S. Greiner, H. M. Byllesby, fellow, Lehigh university. These two investigators compiled existing data on the constitution of the iron-silicon alloys and then conducted tests of iron-silicon alloys containing less than 10 per cent silicon.

Editorials

Corporations Courting Publicity

MORE information is being given to the general public today concerning the expansions and contemplated expansions, plans and prospects, and financing of industrial companies than ever before.

Those who were familiar with the situation a decade or two ago note the contrast in the methods of handling corporations' contacts with the public. Instead of closing their doors and "shooing" away gentlemen of the press, and refusing to give reports concerning their activities, many now are employing press agents to see that they receive more notice and more favorable representation in the public prints.

Corporations, especially the new ones, are appealing to the public, and to make the best impression they must make the most of what degree of prestige they possess. For tomorrow, if not today, they may have something to sell. It is a legitimate procedure, a recognition of the value of publicity for a meritorious proposition.

This is the natural result of the public's growing interest in the stock of many corporations. There has been a change in corporate financing; instead of having to depend on a relatively few moneyed interests for support, certain companies have been able to float new issues of stocks and bonds by taking the public into their confidence.

What effect the reaction in the stock market will have remains to be seen, but it is a safe assumption that corporations now more than ever will feel the need of publicity for successful and going enterprises that require public interest for further development. The public must not be confused; it is well that sound and legitimate enterprises do assert themselves.

Tariff Now International Issue

FROM the former political dictum that the tariff is a local issue the question of tariffs has become not only a national but an international issue. With the increasing contacts and community of interests between nations the question of tariff walls has become increasingly a matter of importance. Various expedients have been superposed on American tariff legislation in an effort to minimize the adverse effect of more or less exclusion of imports and retaliatory acts by other governments. Most-favored-nations, reciprocity and preferentials have been invented and have been somewhat successful.

At the present stage of world commerce European nations are becoming apprehensive of the policies of the United States in imposing duties on imports. What appears to the American citizen as a protection to home industries looks to the European manufacturer like a studied attempt to exclude his goods from this country and thus to limit his markets.

Settlement of international debts left in the wake of the World war is predicated on selling products by the debtor to the creditor and the United States is the creditor par excellence. The European argument is that tariff walls prevent their sales to America.

Protests are being made to the state department by foreign governments against tariff schedules now under consideration by congress. Formation of the United States of Europe to take retaliatory measures has been suggested; a European customs agreement for mutual protection against the United States is another and a league of nations customs truce for a definite period is a third.

Growth of this situation in Europe well may be a cause for thought as approximately half the exports from the United States go to that continent, as measured in dollars. Effective retaliatory measures might conceivably cut down our outbound trade to a point that would change prosperity to stagnation. A change of a few points in percentage is sufficient to cause widespread alteration in this respect.

Anti-Business Complex Is Sinister

NOTHING more forcefully epitomizes the sorry state of affairs into which the legislative department of the federal government has fallen than the attack in the senate upon the appointment of Charles Evans Hughes as chief justice of the Supreme Court of the United States.

Because Mr. Hughes has been associated with big, successful business he is not to be trusted with judicial matters affecting the average citizen—thus may be summed up the charge of the socalled progressive Republicans. Following this

logic to its conclusion, the ideal candidate for the highest court of the land is the struggling, unsuccessful, small-town lawyer who has never counselled in any business transaction.

No thinking business man can review the pillorying to which Mr. Hughes was subjected without experiencing a deep sense of indignation. And to those business men—and they are a majority—who are Republicans, it is a matter of great chagrin that so distinguished a party member as Mr. Hughes could be elevated to the supreme bench only by the votes of the Democratic minority.

Yet for business as a whole the incident has still deeper significance. It coincides with rumors from Washington that a feeling of opposition to big business is rising. There are some who are apprehensive that the appointment of Mr. Hughes was seized upon by the antagonists of industry and commerce as an opportunity to crystallize their destructive sentiments.

It is almost trite to observe that the business of this country is business, and not agriculture or territorial expansion or development of the arts. This nation's unparalleled prosperity, albeit temporarily slightly tarnished, is predicated upon business. Materially speaking, no other nation is so enviably placed, and from the spiritual standpoint—well, it is no worse than many others. It will be a sorry day for labor, which the progressives at Washington claim to champion, if business finds it necessary to seek shelter from the approaching storm.

New Steels Restyle Auto Lamps

FASHION is a hard task master, but some fashions eventually must bow before the dictates of economy, especially when the economical style is just as good to look upon as what today is considered "the fashion." This is as true of automobile headlamps as it is of many other products in general use.

"Fashion" in automobile headlamps today requires a deep, conical shape. The designers have declared that this shape enhances the appearance of the car. In making the lamps, manufacturers must use three drawing operations, and if the material is brass it must pass through two plating operations, one for nickel and the other for chromium, and six polishing and buffing operations. The polishing and buffing cost represents two-thirds of the total manufacturing labor cost.

All of the plating and most of the polishing operations would be eliminated if the manufacturers used corrosion-resistant steel, as the Ford Motor Co. now is doing. But most of these new steels present a drawback for the fashionable headlamp; they cannot be drawn to the great depth required without "showing" small draw marks, which manufacturers say would be objectionable to the buyers of high-grade cars. Ford solved this problem by drawing the body of the lamp to an almost spherical shape, eliminating many costly operations and at the same time obtaining a permanently bright finish and a good-looking lamp.

The trend in lamp manufacture for the higher price cars has been toward the use of brass, but with the greater economy in the labor cost offered by some of the newer steels the trend is quite likely to reverse itself. A designer will design a lamp of excellent appearance, suitable for drawing from stainless steel, when others will follow his example, and the economical way will be the fashionable way.

Engineers Gaining Recognition?

OF CONSIDERABLE importance to the welding industry, and for that matter to all industry, should be the announcement of the United States civil service commission that for the position of senior welding engineer is offered an entrance salary the highest paid to any engineer under the civil service.

Among the qualifications are a university degree in engineering, at least six years professional experience of which three shall have been of supervisory or administrative character involving research and industrial applications of welding. Duties of the engineer will be as follows: "To extend the application of welding in the construction of naval vessels, to keep in touch with the latest developments in the industrial field of welding; to have general oversight over the welding processes at navy yards with a view to co-ordinating and perfecting their methods; to initiate tests and research and to analyze the results of experiments; to prepare specifications for and advise as to the selection and purchase of welding appliances and materials; to criticize design and detailed structural plans of naval vessels as affecting and as affected by the application of welding, and in general to advise the bureau of construction and repair, navy department, on all matters pertaining to the application of welding to ship construction."

While advocates of welding undoubtedly will assume this announcement to portend noteworthy recognition of welding as a means of fabrication, it may have a more far-reaching significance. This action to remunerate an engineer skilled in welding may indicate that the government may be on the threshhold of a new era in which all government engineers will be paid adequately.

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Routing and Production System in Die Castings Plant Insures Quick Shipment. Page 55.

Organization Building Coast Industry

AN ALERT organization is at work on the Pacific coast fostering the interests of the iron and steel industry in that district. The sixth annual conference of the Iron, Steel and Allied Industries of California was held in Del Monte, Calif., Feb. 13-15, and a good report of the proceedings is given on pages 67, 68 and 69 of this issue. Interest in that body should be nation-wide, as it was developed at the conference the total steel market of the Pacific coast states and British Columbia is approximately 2,500,000 tons annually, of which only 400,000 tons now are produced on the coast. A well-informed speaker declared that the iron and steel industry on the coast represents 20 per cent of the industrial structure of that section. Population and demands have been outstripping supplies, suggesting vast possibilities for expansion of iron and steel manufacturing facilities.

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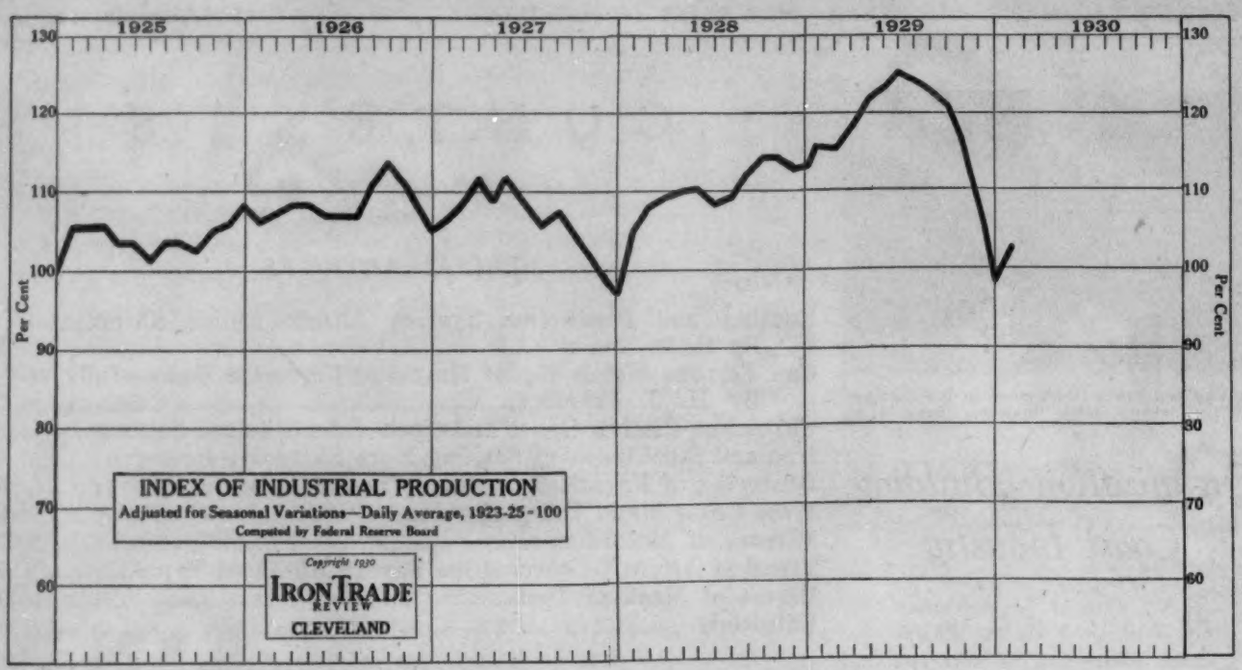
The Business Trend



Industrial Production Again Turns Upward

BASICALLY business continues to strengthen despite further indications that gains are spotty and that the rate of acceleration is slower than last month.

INDUSTRIAL production increased about 4 per cent in January, according to the federal reserve board's preliminary index which rose to 103 compared with the revised figure of 99 for December. In January, 1929, this index stood at 117 and last June it was at 126, a new peak. The average for the years 1923, 1924 and 1925 is taken as 100.

REFLECTING the growing application of new inventions such as the continuous rolling mill and other labor-saving machinery, the reserve board's statistics show that employment in the iron and steel industry last month decreased fractionally and payrolls dropped 3.2 per cent while the index of production climbed about 10 per cent.

THE January upturn in industrial production was chiefly in the iron and steel, automotive, cotton, textile and shoe industries. Production of copper, cement, lumber, anthracite coal and flour declined, and the gain in bituminous coal output was smaller than usual for the season.

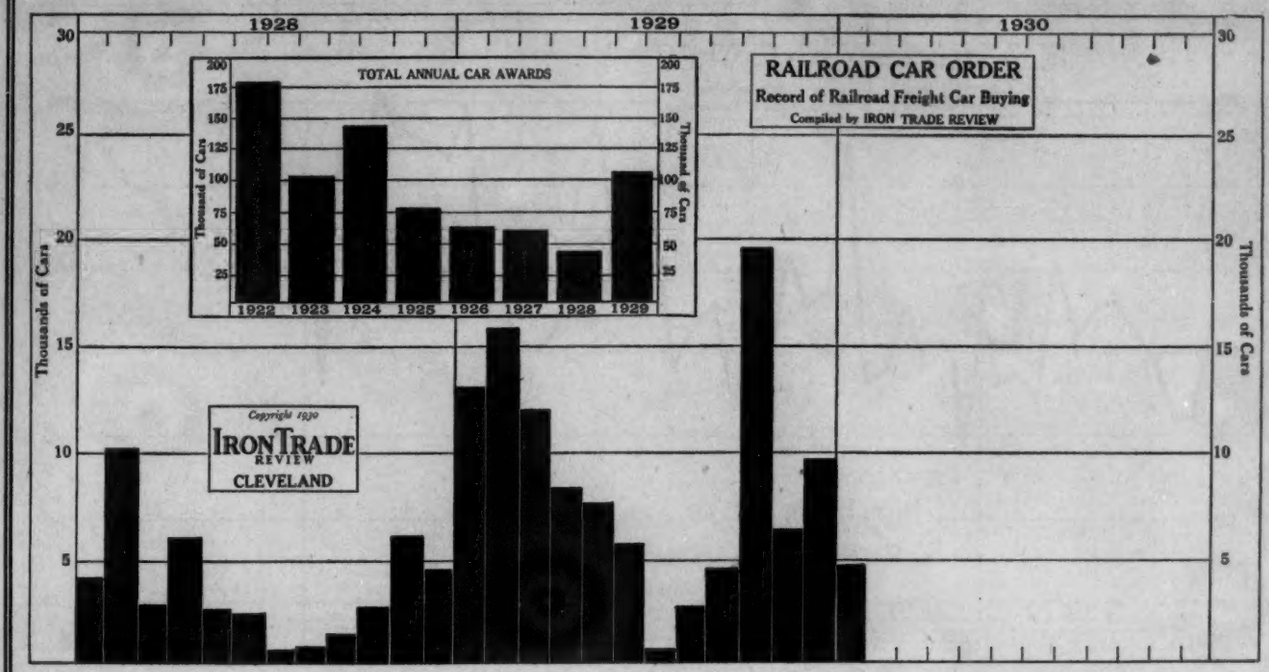
AUTOMOBILE production is slow to gather additional momentum although holding recent gains. January output of cars and trucks in the United States and Canada was 283,477 units compared with 125,499 in the previous month and 422,338 in January, 1929, the department of commerce reports. Compared with December, January output increased 126 per cent but was 33 per cent lower than in January, 1929.

COMMODITY prices remain unsettled with the trend continuing downward. Prices of iron and steel products, however, give further evidence of having about touched bottom several weeks ago on the current swing.

HOPE of further credit easing is fading for the immediate present following the strong intimation of federal reserve bank authorities that it will not be their policy to make money cheap enough to be an artificial stimulant to business.

WITH commodity liquidation and business readjustment evidently not completed, new projects are being considered cautiously and overproduction avoided. But ordinary needs bulk large, sustaining and expanding industrial activities after their recent decline below normal levels.

The Business Trend

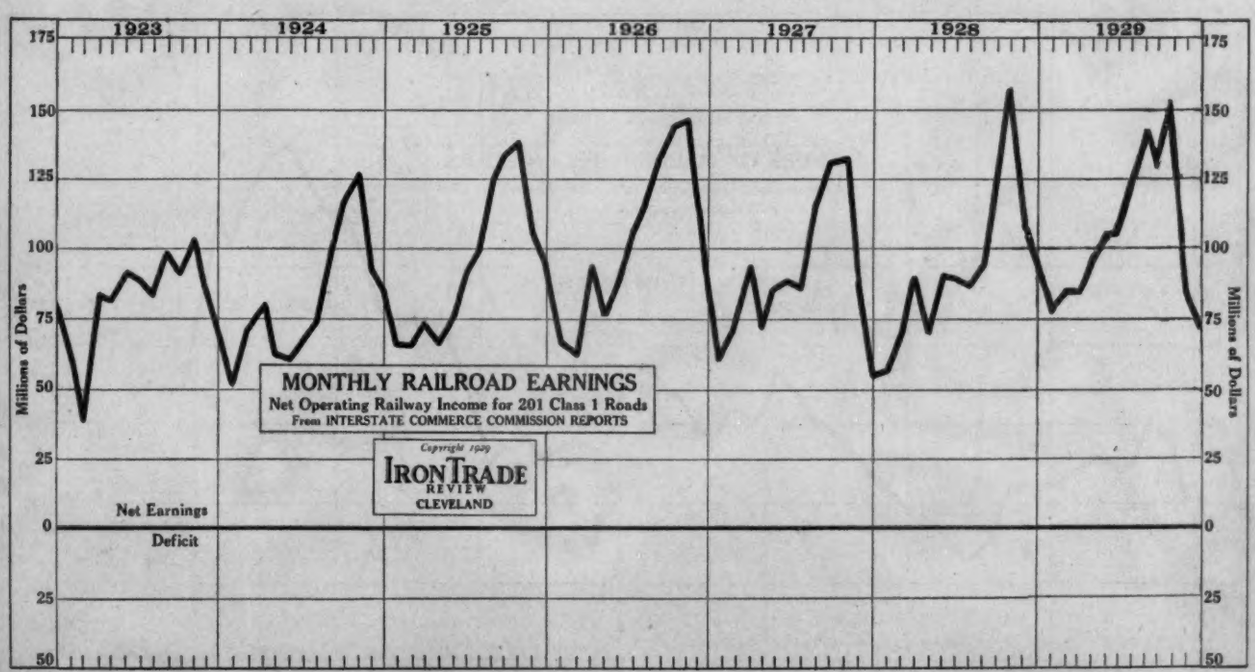


Railroad Car Orders

RAILROADS in January placed orders for 4966 freight cars, a small number compared with the 1929 monthly average of 8842 cars. February awards, however, based upon those already announced and pending lists, will more than triple the January total, it is estimated, perhaps exceeding the 17,000-mark. The carriers ordered 9710 cars in December, 1929, and 13,196 in January, 1929. Car orders last month were the smallest since August. The 1929 total was 106,105 against 44,763 in 1928 and 180,465 in 1922.

Railroad Earnings

ALTHOUGH net income of Class I railroads for 1929 was the best ever recorded, the December return just reported was unusually low, reflecting the trade recession. December income of $72,227,197 compares with $94,385,667 for the corresponding month one year before, a decline of 23.7 per cent. Earnings for all of 1929, the Bureau of Railway Economics reports, amounted to $1,274,774,188, exceeding those of 1926 by 3.4 per cent. Earnings in 1929 equaled 4.95 per cent on capital invested.



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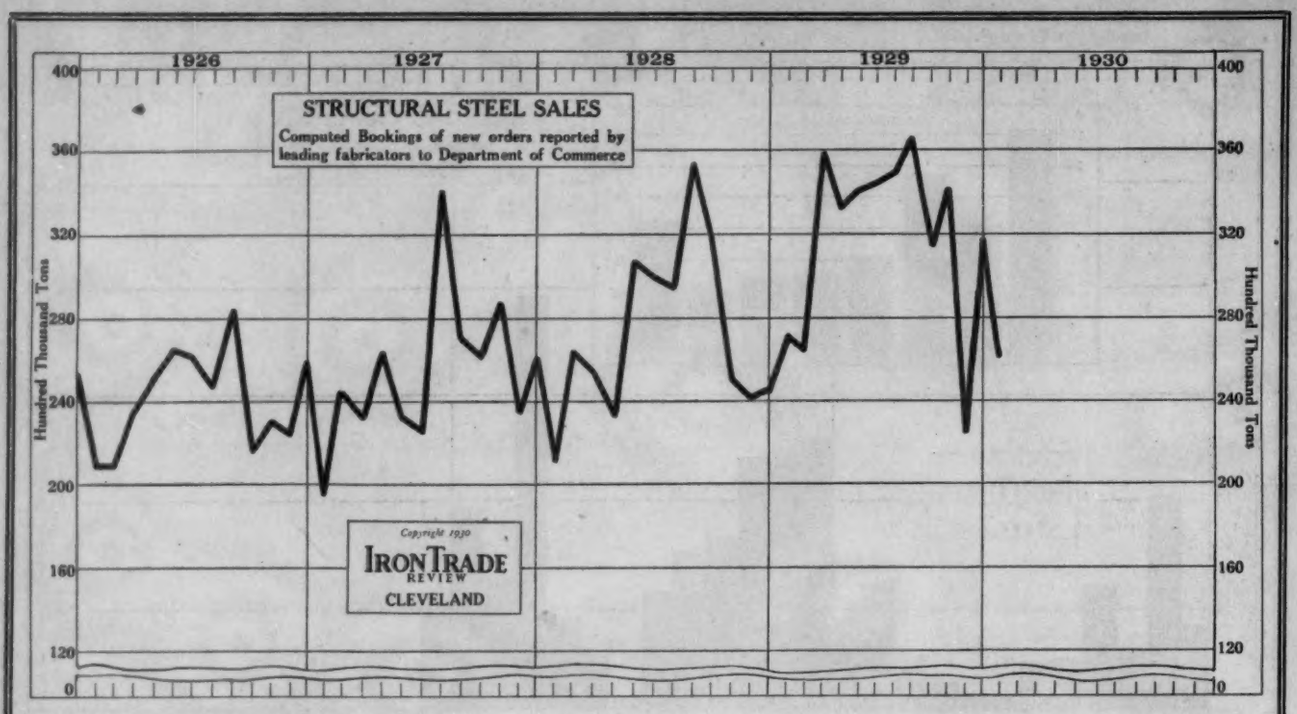
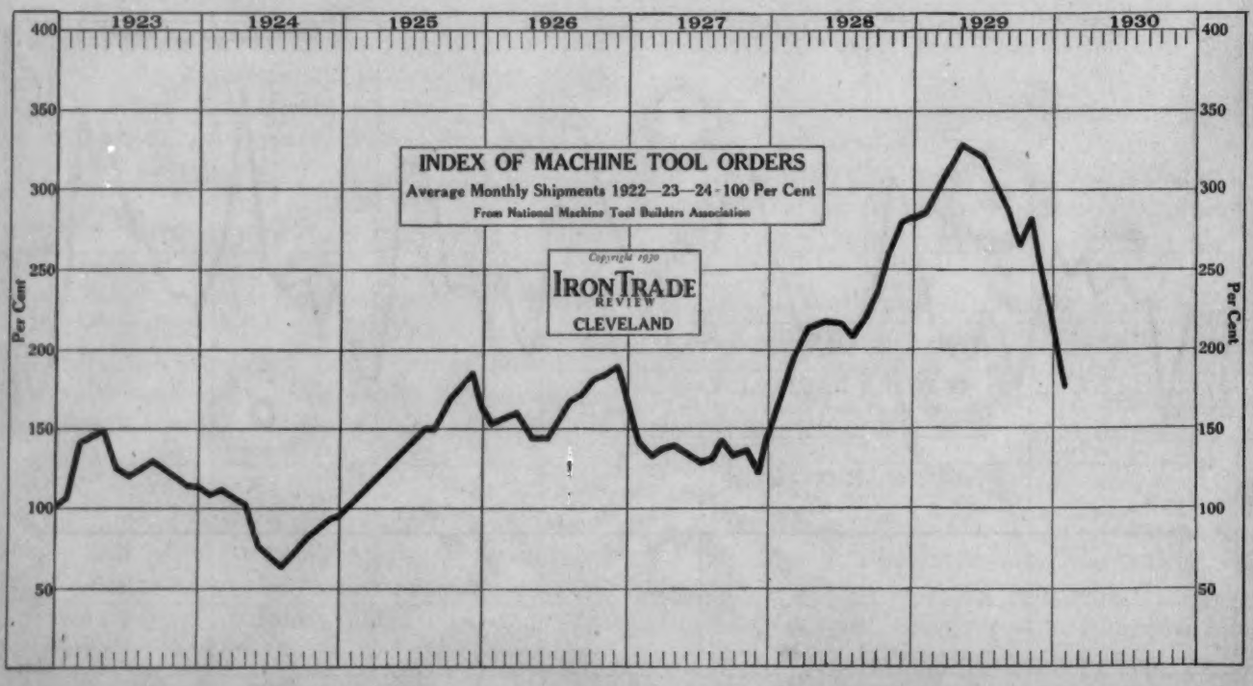


Structural Steel Sales

STRUCTURAL steel orders in January were 18 per cent below those for December and 5 per cent under those for January, 1929. Computed bookings, the department of commerce reports, were 261,800 tons against 319,550 tons in December and 273,350 tons in January, 1929. Actual bookings were 68 per cent of capacity against 83 per cent in December and 71 per cent in January. Shipments were 257,950 tons, or 67 per cent of capacity, compared with 277,200 tons, or 72 per cent, in December.

Machine Tool Orders

ORDERS for machine tools in January showed another sharp decline, according to the three months moving average compiled by the National Machine Tool Builders' association. New bookings were the smallest for any month in two years. The association's index dropped to 175.4 in January compared with 221 for December and 285.6 for January, 1929, and 173.6 for January two years ago. The trend of orders has been downward since last May when the peak for all time was reached at 334.3.



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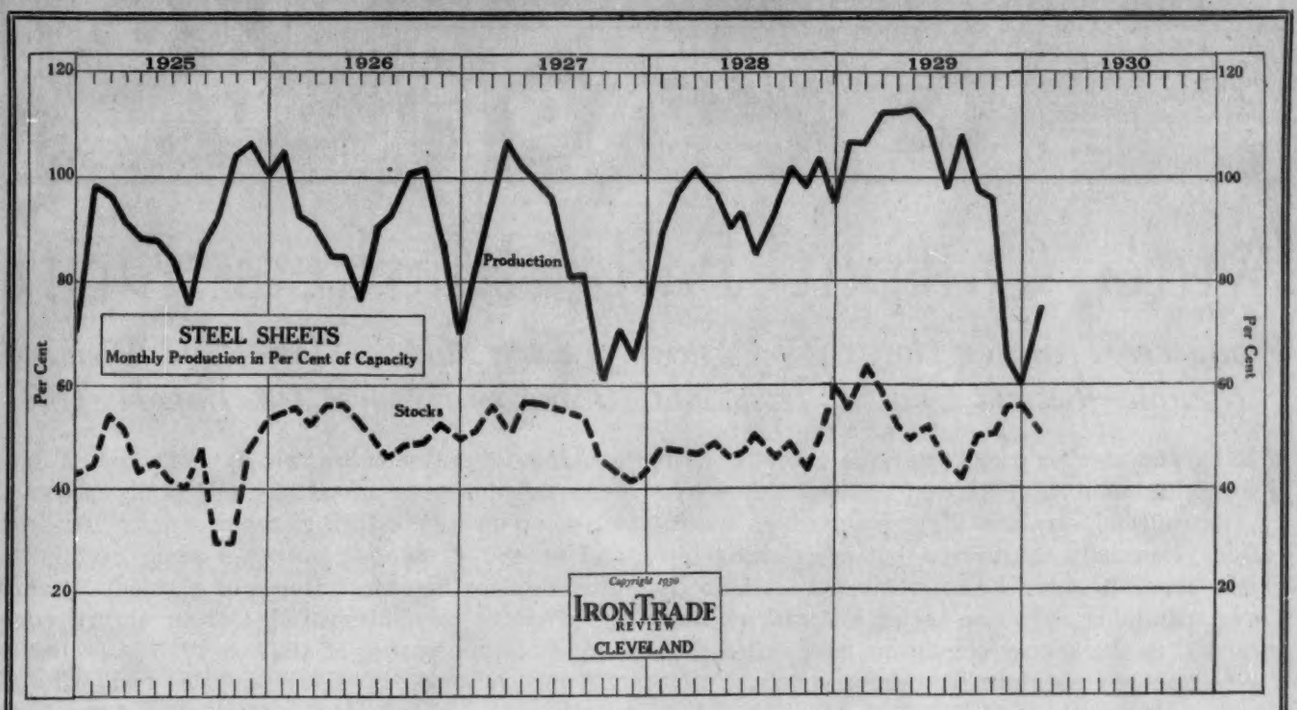
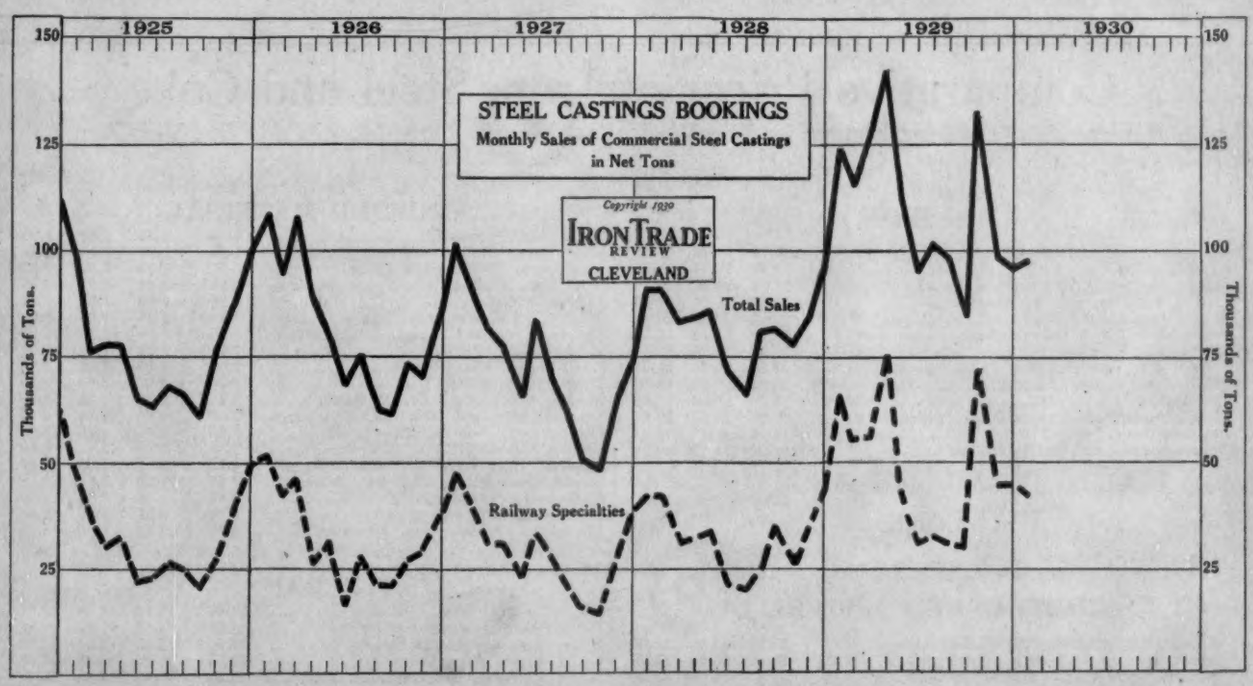


Steel Sheets

AN INCREASE of 63 per cent in sales of steel sheets by independent producers in January was accompanied by an upturn in production and a decline in mill stocks, statistics compiled by the National Association of Flat-Rolled Steel Manufacturers reveal. January output of 291,529 tons was equal to 77.6 per cent of independent capacity compared with 181,916 tons, or 60 per cent, for December. Stocks dropped from 57.3 per cent of capacity at the end of December to 51 per cent at the close of January.

Steel Castings

ORDERS for steel castings in January totaled 97,228 tons, or 67 per cent of plant capacity, compared with 94,653 tons in December and 124,313 tons in January, 1929, according to reports to the department of commerce. December orders were at 65 per cent of capacity compared with 85 per cent in January, 1929. Bookings of railway specialties in January totaled 39,281 tons, or 58 per cent of capacity, against 41,179 tons, or 61 per cent, for December and 64,809 tons, or 96 per cent, for January, 1929.



Auto Output Falls; Markets Drift

Producers Transfer Hopes for Upturn to Late March—Tin Plate Demand Notable—Second Quarter Iron Sold—January Exports Up, Imports Off

IRON and steel markets continue to drift, with a slight touch of dispirited manner this week. The railroads are providing noteworthy specifications, especially at Chicago, but are making few fresh commitments. Automobile production is lower. Building shows up better in inquiries than awards. Easier money conditions have failed thus far to mature important pipe line projects.

Railroad Business a Prop at Chicago

Whatever increase February has developed in pig iron and steel ingot production—and the prospects are next week's statistics will reveal a moderate one—is due chiefly to the sharp improvement early in the month and the heavy backlogs of railroad business at Chicago. Deliveries are being extended at Chicago, but mills at Pittsburgh, Buffalo and Birmingham are barely holding their own, while at Youngstown and Cleveland operating rates are slightly lower.

The spurt of late January having flattened out, the industry now looks to late March or early April to develop another. Even moderate retail demand for automobiles will be reflected in factory schedules, as no stocks are being accumulated. The usual spring requirements for iron and steel for outdoor purposes seem certain to provide some impetus. Hopes of a steady upward march have been dissipated, but an upturn comparable to the spring of 1927 or 1928 is probable.

Some interest in second-quarter material is manifested. In pig iron a few sales have been made for that delivery at current prices. The first second-quarter sheet inquiry is out at Detroit. Unless specifications for finished steel rise sharply in the next two weeks, and there are no indications of this, the carryover of tonnage into the new quarter will be comparatively heavy and may handicap producers' efforts to advance prices.

Begin Shipping 100,000 Tons of Plates

The predominance of railroad business quickens demand for plates and small shapes. On this account prompt delivery on some sizes is impossible at Chicago. In addition, plate mills at Chicago will shortly begin shipping against the

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 26 1930	Jan. 1930	Nov. 1929	Feb. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.86
Basic, valley	18.50	18.50	18.50	17.50
Basic, eastern, del. eastern Pa.	19.00	19.20	19.75	20.50
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.26
No. 2 foundry, Chicago	20.00	20.00	20.00	20.00
*Southern No. 2, Birmingham	15.00	14.70	14.00	16.50
**No. 2X, Virginia Furnace	18.25	18.25	18.25	21.25
**No. 2X, Eastern del. Philadelphia	21.26	21.56	22.26	22.01
Malleable, valley	19.00	19.00	19.00	18.00
Malleable, Chicago	20.00	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.76
Ferromanganese, del. Pittsburgh	103.79	104.79	109.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $13 to $14, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.60	2.55	2.65	2.90
Connellsville foundry, ovens	3.50	3.50	3.55	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	33.00	33.80	35.00	34.25
Sheet bars, open-hearth, Pittsburgh	33.00	33.80	35.00	34.25
Billets, open-hearth, Pittsburgh	33.00	33.80	35.00	33.25
Wire rods, Pittsburgh	40.00	40.00	40.00	42.00

	Feb. 26 1930	Jan. 1930	Nov. 1929	Feb. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.90	1.90	1.90
Steel bars, Chicago	1.95	2.00	2.00	2.00
Steel bars, Philadelphia	2.17	2.17	2.22	2.27
Iron bars, Chicago	1.95	2.00	2.00	2.05
Shapes, Pittsburgh	1.85	1.90	1.90	1.90
Shapes, Philadelphia	1.86	1.91	1.96	2.01
Shapes, Chicago	1.95	2.00	2.00	2.00
Tank plates, Pittsburgh	1.85	1.90	1.90	1.90
Tank plates, Philadelphia	2.00	2.05	2.10	2.10
Tank plates, Chicago	1.95	2.00	2.00	2.00
Sheets, black, No. 24, Pittsburgh	2.65	2.70	2.75	2.85
‡Sheets, blue anl., No. 13, Pittsburgh	2.25	2.30	2.35	2.10
Sheets, gal., No. 24, Pittsburgh	3.30	3.35	3.45	3.60
Sheets, black, No. 24, Chicago	2.80	2.90	2.95	3.00
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.25
Sheets, galvanized, No. 24, Chicago	3.45	3.55	3.65	3.75
Plain wire, Pittsburgh	2.40	2.40	2.40	2.50
Wire nails, Pittsburgh	2.30	2.35	2.40	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.35	5.35

*Comparison for February, 1929, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	17.00	16.55	16.30	18.60
Heavy melting steel, eastern Pa.	14.50	14.50	15.13	16.30
Heavy melting steel, Chicago	13.50	12.65	13.05	16.00
No. 1 wrought, eastern Pa.	15.25	15.25	16.25	16.25
No. 1 wrought, Chicago	13.50	13.40	13.85	15.75
Rails for rolling, Chicago	15.00	14.65	15.30	17.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	2.00c to 2.10c
New York, del.	2.075c to 2.125c
Boston, del.	2.165c to 2.265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Coatesville, Pa., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.30c
St. Louis, del.	2.17c
Detroit, del.	2.14c

STRUCTURAL SHAPES

Pittsburgh, base	1.80c to 1.85c
Philadelphia, del.	1.86c to 1.96c
New York, del.	2.045c to 2.145c
Boston, del.	2.165c to 2.265c
Chicago, base	1.95c to 2.00c
Cleveland, delivered	2.04c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.00c to 2.05c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.14c

BARS

SOFT STEEL

Pittsburgh, base	1.80c to 1.90c
Chicago, base	1.95c to 2.00c
Birmingham, base	2.00c to 2.05c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland base, local mills	1.85c
Cleveland, del., outside mills	1.875c
Philadelphia, del.	2.17c to 2.22c
New York, delivered	2.19c to 2.24c
Boston, delivered	2.165c to 2.265c
Detroit, del.	2.085c
Pittsburgh, cold finishing	1.90c to 2.00c
Pittsburgh, forging quality	2.05c to 2.15c

RAIL STEEL

Chicago Heights	1.85c to 1.90c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.95c to 2.00c
New York, delivered	2.19c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.20c
Stock lengths from mill	1.95c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.80c to 1.85c
Road and bridge work	1.90c to 2.00c
Philadelphia, cut lengths	2.42c to 2.62c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

SHEETS

SHEET MILL BLACK, NO. 24

Pittsburgh, base	2.65c
Detroit, delivered	2.84c to 2.94c
Philadelphia, delivered	2.97c to 3.07c
Gary, Indiana Harbor	2.75c to 2.85c
Chicago, delivered	2.80c to 2.90c
Birmingham, base	2.90c
St. Louis, del.	3.17c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED NO. 24

Pittsburgh, base	3.30c
Philadelphia, delivered	3.62c to 3.72c
Gary, Indiana Harbor	3.40c to 3.50c
Chicago, delivered	3.45c to 3.55c
Birmingham, base	3.45c to 3.50c
St. Louis, del.	3.72c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.25c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.57c
Birmingham	2.45c to 2.50c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	2.10c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.42c
St. Louis, delivered	2.52c
Birmingham	2.30c to 2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	3.90c
Detroit, delivered	4.09c to 4.19c

FURNITURE

Pittsburgh	3.90c to 4.00c

(*Turn to the following page*)

100,000-ton order of the Milwaukee pipe fabricator for the Texas-Chicago pipe line. New tank inquiry at Chicago totals 11,000 tons, making fully 35,000 tons pending there.

Steel bars, like sheets and strip, lack the vigor usually imparted by automotive demand, except at Chicago where implement and tractor manufacturers are specifying satisfactorily. Hot-rolled strip is in relatively better call than cold-rolled. Manufacturers' wire leads activity in wire products, where price irregularities are more pronounced, extending to wire rods.

Tin plate demand is surprisingly heavy. Many consumers of cans have reordered, and some important manufacturers of tin plate are booked practically full through the season, into June and July. It is apparent that the early advent of winter last November has depleted stocks of canned goods.

Structural steel awards this week totaled about 36,880 tons, compared with 34,405 tons last week and 34,500 tons a year ago.

4500 Freight Cars Are on Inquiry

Probably 4500 freight cars are pending, including 1000 refrigerator cars for the American Refrigerator Transit Co., which should be placed shortly. The Pacific Fruit Express may purchase 1500 of this type. New freight car inquiry includes 125 for the Green Bay & Western and 100 for the Missouri-Kansas-Texas. The Pullman Co. will build 100 passenger cars in its own shops. Forty-six locomotives and 25 extra tenders are on inquiry.

Sharper competition for pig iron business in March is indicated by furnace interests' lack of orders to carry them through this quarter.

Independent Operations Show Decline

Chicago steelworks are maintaining an 88-90 per cent operating rate. Pittsburgh holds at 78-80, Buffalo at 74, Youngstown is off 2 points to 74, while at Cleveland 29 out of 34 open hearths, or one less than a week ago, are active. Operations of Steel corporation subsidiaries, which have been rising since early January, are unchanged this week at 85-86 per cent. Independent producers have declined 2 points, to 75 per cent.

January exports of iron and steel, at 225,090 gross tons, compare with 215,242 tons in December and 274,296 tons last January. Imports last month totaled 42,314 tons, a slight decline from the 47,486 tons of December and the 54,793 tons of January, 1929.

Export prices of all iron and steel products made on the Continent and included in syndicate agreements have been advanced. This action has strengthened the domestic European market to the extent of quelling consumers' hopes for cuts.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (February 26, 1930)	$35.24
Last week (February 19, 1930)	35.24
One month ago (January, 1930)	35.56
Three months ago (November, 1929)	36.03
One year ago (February, 1929)	36.28
Ten years ago (February, 1920)	65.63
Fifteen years ago (February, 1915)	22.21

IRON TRADE REVIEW composite of 14 leading iron and steel products has gone through the last week of January and the four weeks of February unchanged at $35.24. Last February the index was $36.28.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.90c
Delivered Detroit	2.09c to 2.19c
Hot strip 6 1/8 to 24-in., Pitts.	1.80c
Delivered Detroit	1.99c to 2.09c
Hot strip, bands 6 in. and under, Chicago	2.00c
Do. 6 1/8 to 24	1.90c
Cooperage stocks, Pittsburgh	2.10c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.65c
Delivered, Detroit	2.785c to 2.885c
Worcester, Mass. (3 tons and over)	2.80c to 2.90c

ALLOY STEEL

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.10c
Do, delivered, Detroit	2.335c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

(To Merchant Trade)

Standard wire nails	$2.25 to 2.30
Cement coated nails	2.30
Galvanized nails	4.30

(Per pound)

Polished staples	2.75c
Galvanized staples	3.00c
Barbed wire, galvanized	2.95c
Annealed fence wire	2.45c
Galvanized wire	2.90c

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.40c
Spring wire	3.40c
Wire, delivered Detroit	2.535c
Nails, delivered Detroit	2.535c

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there; Duluth $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.55c
Cut nails, l.c.l., f.o.b. mills	2.65c
Sheet piling, base, Pittsburgh	2.20c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	3.90c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.80 to 6.90 off
Wrought, c.l., Chicago	$7.00 to 7.10 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lists, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread ..... 60 to 70 off

Rolled thread ⅞ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 60 to 70 off

MACHINE BOLTS

All sizes, cut thread ..... 60 to 70 off

Rolled thread ⅞ x 6 and smaller take 10 per cent lower list.

Lag screws ..... 60 to 70 off

Plow bolts, Nos. 1-2-3-7 heads ..... 60 to 70 off

Tap bolts ..... 60 to 70 off

Blank bolts ..... 60 to 70 off

Stud bolts without nuts ..... 60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts ..... 60-5 off

Nuts

Semifinished ..... 60 to 70 off

HEXAGON CAP SCREWS

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 85 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. diam. and smaller ..... 80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	3.10c
Structural, c.l., Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	39.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	39.00
Forging, Philadelphia	44.30

SHEET BARS

Pittsburgh	$33.00
Youngstown	33.00
Cleveland	33.00
Chicago	35.00

SLABS

Pitts., Young.	$33.00
Cleveland	33.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	41.00

SKELP

All grades, Pittsburgh	1.85c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% maganese	11.00 to 11.50
North African low phosphorus	12.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 6% (nominal)	11.50 to 12.00
Newfoundland foundry, 55%	9.00
Tungsten future, short ton unit, duty paid	15.25 to 15.50
Chrome ore, 48%, net ton c.i.f.	$22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 to 32 cents
Indian (48-50 per cent)	29 to 32 cents
Brazilian (46-48 per cent)	28 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$19.50 to 20.50

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes., Chewelah, Wash., base	22.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

Market Is Quieter, with Shipments Steady —More Inquiries Appearing for Second Quarter—Southern Prices Easier

CONDITIONS in the pig iron market are less satisfactory than a week ago, with further decline in sales, and shipments for the majority of producers moderately ahead of the January average. Many furnace interests are in need of additional tonnage for the remainder of the first quarter, indicating keener competition in March. Inquiries for second quarter are developing and sellers are quoting present prices for that period. The automotive industry as a whole is not actively interested for that period. An Indianapolis motorcar builder is inquiring for 1500 tons. Inquiries from the New England territory include 5000 tons for a Connecticut foundry. Cleveland furnace interests sold 14,000 tons in the past week. Southern iron displays further weakness.

PITTSBURGH, Feb. 25.—Demand for pig iron in the past week declined from the low level prevailing since the first of the month. New buying picked up early in the year but business barely held at a steady level for the first two weeks of February and now has fallen below the January rate. Buyers who covered only for February are slow to enter the market for March requirements, and new orders are for small tonnages. Important inquiries are lacking. Shipments have declined but compare favorably with a month ago. Operations at sanitary ware and radiator plants continue light and consumption at some steelworks has dropped since the first of the month. Prices are unchanged, but nominal in view of the small sales.

New York, Feb. 25.—Pig iron buying is more active, the week's sales aggregating 7000 to 8000 tons. A substantial portion is for delivery in the second quarter. One seller here who also is active in New England estimates that in the two districts close to 15,000 tons is up for figures.

The Eastern Malleable Iron Co., Naugatuck, Conn., is reported inquiring for 5000 tons.

Buffalo iron continues moderately steady at $16.50 to $17, base, and southern iron at $18.50, delivered New York docks. At least 2000 tons was purchased by the Thatcher Furnace Co., Newark, N. J., from Buffalo and eastern Pennsylvania furnaces. The melt appears to be improving.

That combination rail and water rates from the Alabama district to northern Atlantic ports will be continued beyond March 31 seems assured, according to reliable information here. Present rates are to continue in effect at least until September, with a probability of continuing beyond that month. Existing rates are $5.50 to New York; $5.75 to the New England district; $5.25 to Philadelphia, and $5 to Baltimore.

Boston, Feb. 25.—Inquiries for pig iron total about 10,000 tons, while in the past week sales aggregated 2200 tons. The most important inquiry is for 5000 tons. Prices are steady.

Buffalo, Feb. 25.—Pig iron sales are increasing, 7000 to 10,000 tons being booked in the past week. Current inquiry is about 5000 tons. While competition for eastern business continues keen some Buffalo sellers say $17 is their minimum on foundry for outside delivery. The $18.50 price for the local district is firm.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
*Basic, del., Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	19.00 to 19.50
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	20.76 to 22.40
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 2X, Eastern del., Phila.	21.76
No. 1X, Buff. fur, for local del.	20.00
No. 2 foundry valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy., Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
No. 2 plain, del., Phila.	20.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.41 to 21.91
No. 2, Brooklyn, Buffalo all rail	21.41 to 21.91
No. 2, Newark, N. J., Bu. all rail	19.78 to 20.28
No. 2 Ala., Bir. base, local del.	15.00
No. 2 Tenn., Bir. base, local del.	15.00
No. 2 Tenn., del. Cincinnati	16.69 to 18.19
No. 2 Alabama del. Cincinnati	16.69 to 18.19
No. 2 Alabama, del. Cleveland	20.51 to 21.01
No. 2 Alabama, del. Chicago	19.51
No. 2 Alabama, del., St. Louis	18.42 to 18.92
No. 2 Ala., Phila., dock dely	18.25 to 19.25
No. 2 Ala., Balt., dock dely.	18.00 to 19.00
No. 2 Ala., N. Y., dock dely.	18.50
No. 2 Ala., Boston, dock dely.	20.21
No. 2X, Brooklyn, Buffalo all rail	21.91 to 22.41
No. 2X, Newark, Buff. all rail	20.28 to 20.78
No. 2X, eastern, del. Phila.	21.26
No. 2X, fdy., Bu. fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.41 to 21.91
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$22.60
No. 1 foundry, del. Montreal	24.00
No. 2 foundry, del. Toronto	22.10
No. 2 foundry, del. Montreal	23.50
Malleable, del. Toronto	22.60
Malleable, del. Montreal	24.00
Basic, del. Montreal	22.50

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22 to $23; 7—$23 to $24; 8—$24 to $25; 9—$25 to $26; 10—$27 to $28; 11—$29 to $30; 12—$31 to $32; 13—$33 to $34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

Cleveland, Feb. 25.—Pig iron shipments continue to show moderate expansion while sales are subsiding. The volume of new business for furnace interests with headquarters in Cleveland declined during the past week to 14,000 tons from 20,000 tons in the week preceding. Shipments insured a better record for February than January, despite the fewer number of days. The only exception to this is a merchant furnace interest with a large share of its output going to the automotive industry. Its daily average of shipments in February is likely to be slightly less than in January. The automotive industry is backward with new inquiries at a time when other industries are showing more interest in the market for second quarter. The past week's volume of inquiries was approximately 12,000 tons, about half of this being for second quarter. Few inquiries for second quarter have developed from any of the motorcar plants. An Indianapolis melter is in the market for 1500 tons for second quarter, and a northern Ohio consumer wants 500 tons for that period. In the Cleveland district a large share of the foundries are on a four-day week basis. Most furnace interests are piling iron, while a local steelworks blast furnace plant is taking iron off the yard to supply full operations for its steelworks. The Corrigan, McKinney Steel Co. has lighted another stack that has been out for relining, now operating all four of its units. Northern Ohio furnaces are not competing against the southern high-phosphorus product in southern Ohio and Indiana. Cleveland furnaces continue on a basis of $18 to $18.50, furnace, for outside shipment and $19 for local delivery. The lake furnace price in northern Indiana and Michigan remains $19.50 to $20, base. These prices are being quoted on second quarter inquiries.

Chicago, Feb. 25.—Sales of pig iron are smaller, as fill-in requirements for March predominate. Moderate size orders for March and April and the full second quarter are coming in but the total is small. February shipments are estimated at 15 to 20 per cent over those of January. Furnace interests are taking some tonnage off

(*Concluded on Page* 101)

The Market Section

Coke

Foundry Grades Fairly Active in Some Districts—Heating Fuel Quieter—Production Held Down

THE market for heating coke is approaching the usual lull at the close of the winter season. Demand for blast furnace coke has not picked up appreciably, and the foundry grades reflect the intermittent operations in various districts. Production of all grades in the Connellsville district is held down to about 34,000 tons weekly, compared with 66,000 tons a year ago.

Pittsburgh, Feb. 25.—Beehive coke demand is light but fairly steady despite reduced activity in the market for heating fuel. Sales of furnace coke are limited to small prompt lots and producers are holding down output to prevent accumulations. They are able to keep the price at $2.60, minimum. Foundry coke demand shows no further improvement but sales are steady at the previous rate. New orders for heating coke are restricted to small lots for current needs. Prices generally are unchanged.

Production of coke in the Connellsville region for the week ended Feb. 15 was 34,300 tons, compared with 34,830 tons the preceding week and 66,380 tons for the same period a year ago, according to the *Connellsville Courier*.

Boston, Feb. 25.—Foundry coke business proceeds on the same hand-to-mouth basis as noted for two or three months. Extremely warm weather has checked domestic sales. Prices are unchanged.

New York, Feb. 25.—Foundry coke is moving more actively. Prices are unchanged at $3.50 to $3.75, Connellsville, and $4.85, Latrobe, for beehive; and $9 to $9.40, delivered, Newark, N. J., $11 New England, and $9, Philadelphia, for by-product foundry coke. Beehive furnace coke continues $2.50 to $2.75, Connellsville.

Cincinnati, Feb. 25.—Sales of domestic grades of coke are declining, while by-product foundry coke is moving at the rate set early this month. Prices are unchanged.

Chicago, Feb. 25.—By-product foundry coke shipments are continuing at a rate comparable with production, which remains practically at capacity for the district. Prices are unchanged at $8, ovens, and $8.75 for delivery in the Chicago switching district.

St. Louis, Feb. 25.—Daily shipments of metallurgical coke are averaging larger this month than in January, though smaller than in February, 1929. New orders booked by by-product interests are chiefly for prompt or March delivery. Stocks in producers' yards are smaller than at this time last year, due mainly to the smaller rate of production since Dec. 31. Prices are steady.

Birmingham, Ala., Feb. 25.—New shipments will start soon for the West and Northwest, as coke manufacturers in this district have been active in selling in those territories. Practically all by-product coke ovens here are in operation. Prices are unchanged.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Specifications Show Substantial Gain Over January

New York, Feb. 25.—Spiegeleisen specifications show further improvement. The tonnage this month is likely to equal January. Domestic spiegeleisen, 19 to 21 per cent, is $34, furnace, subject to differentials on quantities. Ferromanganese specifications also have increased. The price is unchanged at $99, duty paid, tidewater, with differentials on quantities.

Shipments of nearly all special ferroalloys and of nickel to steel mills have increased. Prices are steady, including tungsten.

Pittsburgh, Feb. 25.—Ferroalloy shipments are steady and tonnage is ahead of the rate a month ago. Demand shows about the same proportionate decrease from last year as in operations in the iron and steel industry. Occasional small orders are received for ferromanganese and spiegeleisen. Prices continue $103.79 and $34, delivered Pittsburgh, respectively, for small lots. Ferrotungsten demand continues restricted but ferrosilicon and ferrochrome are moving in fair volume.

Drawback Granted J & L

Washington, Feb. 25.—The treasury department has announced the allowance of drawback on steel products manufactured by Jones & Laughlin Steel Corp. at its plants at Pittsburgh and Aliquippa, Pa., with the use of ferromanganese produced from imported manganese ore by firms operating under drawback regulations.

Bolts, Nuts, Rivets

Specifications Decrease and Are Under January Volume

NUT AND BOLT PRICES, PAGE 86

Pittsburgh, Feb. 25.—Specifications for bolts, nuts and rivets are slightly less active and fail to equal the demand of a month ago. Demand from jobbers continues restricted although railroad equipment builders specify steadily. Prices continue at 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets.

New York, Feb. 25.—Operations at eastern bolt and nut plants are recovering slowly, with output now at 60 to 65 per cent. Improved demand is reflected particularly by buying by structural plants. An interesting inquiry calls for about 300 tons of ⅝ by 32-inch bolts for a domestic consumer in this district.

Cleveland, Feb. 25.—Rivet orders have dwindled. Nut and bolt specifications are fair, although in some consuming lines, notably automotive, only current needs are being ordered. Prices are unchanged and second quarter announcements probably will be out in a week or two.

Chicago, Feb. 25.—Second quarter contracting for bolts, nuts and rivets probably will get under way next week. February specifications dropped from a year ago and also failed to hold up to January. It is indicated second quarter quotations will be unchanged at 60 to 70 off list for carriage and machine bolts, 3.20c for structural rivets in carload lots, and 70 to 70 and 10 off for rivets ½-inch and smaller.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88 50
Do., 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb., con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Continued Strength Shows in Most Centers—Supply Not Excessive—Prices Tend Upward

PRICES of iron and steel scrap are making steady gains by small steps, as supplies are relatively light and yard stocks are low. Consumers are not taking large tonnages but they buy readily in small lots and absorption is immediate. Selling for future is not large as dealers are seeking to avoid uncertainties.

Chicago, Feb. 25.—Iron and steel scrap remains strong, with melting steel at $13.50 to $14. While the balance favors sellers, further evidence is that the market is being controlled and little possibility is seen of anything like a runaway market. Consumer bookings in the week just closed show fair gains over recent weekly averages. On the other hand, little scrap is coming out except from railroads and larger industrial producers. Low phos scrap from car building shops has not reached volume. Little more railroad scrap will appear until about March 10. Trading among dealers is quiet. Many sellers are hesitant about committing themselves. All scrap appearing on tracks is quickly absorbed, and yard production continues at a low ebb.

Boston, Feb. 25.—There was a little more active market for scrap the past week. Early in the week a slight inquiry for heavy melting steel resulted in sales as high as $11.30, but this faded out quickly. Buying of shafting for Pittsburgh mills was quiet with prices ruling at $14.50.

Buffalo, Feb. 25.—Dealers report growing scarcity of material, due to

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.00
Boston, dealers	10.50 to 11.00
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	14.50 to 15.50
Buffalo, No. 2	12.50 to 13.00
Chicago	13.50 to 14.00
Cincinnati, deal	12.50 to 13.00
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	13.25 to 13.75
Detroit, No. 1 deal.	12.00 to 12.25
Detroit, No. 2 deal.	10.50 to 11.00
East Pa., del. mill	14.50 to 15.00
N. Y. deal R. R.	10.50 to 11.50
N. Y., deal. yd.	8.00 to 8.50
Pittsburgh, No. 1	16.75 to 17.25
St. Louis, No. 1 sel.	13.25 to 13.75
Valleys, No. 1	16.50 to 17.00

COMPRESSED SHEETS

Buffalo, (dealers)	12.50 to 13.00
Chicago	12.00 to 12.50
Cleveland	13.00 to 13.50
Detroit, dealers	11.75 to 12.25
E. Pa. new mat.	13.00 to 13.50
Pittsburgh	16.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	9.50 to 10.00
Cincinnati, deal	10.25 to 10.75
Cleveland	10.75 to 11.25
Eastern Pa.	11.50 to 12.00
Pittsburgh	14.50 to 15.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	9.00 to 9.50
St. Louis	9.00 to 9.50

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Boston, dealers	9.25 to 10.50
Buffalo	18.25 to 18.75
Chicago (3 feet)	17.00 to 17.50
Chicago, 2 ft and under	18.00 to 18.50
Cincinnati, deal	17.75 to 18.25
Detroit, dealers	16.00 to 16.50
Pittsburgh (3 ft.)	19.50 to 20.00
Pittsburgh, 2 feet and under	20.50 to 21.00
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	10.50 to 11.00
Buffalo	12.75 to 13.00
Chicago, net	11.00 to 11.50
Cinn., deal., net	8.75 to 9.25
Detroit, net, deal	9.00 to 9.50
Eastern Pa.	11.50 to 12.00
N. Y., deal., mill	7.75 to 8.25
St. Louis	11.50 to 12.00

COUPLERS, SPRINGS

Buffalo	18.25 to 18.75
Chicago	16.00 to 16.50
Eastern Pa.	19.50 to 20.00
Pittsburgh	21.00 to 21.50
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	16.00 to 16.50
St. Louis	13.75 to 14.25

LOW PHOSPHORUS

Buffalo, billets and bloom crops	18.50 to 19.00
Cleve. billet and bloom crops	17.50 to 18.00
Eastern Pa.	20.00 to 21.00
Pitts. billet and bloom crops	21.50 to 22.00
Pitts. sheet bar crops	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	14.25 to 14.75
St. Louis	13.75 to 14.25

SHOVELING STEEL

Chicago	13.50 to 14.00
Cleveland	11.25 to 11.75
St. Louis	12.50 to 13.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	11.50 to 12.00
Buffalo, No. 2	14.00 to 14.50
Chicago, No. 1	13.50 to 14.00
Chicago, No. 2	13.50 to 14.00
Cincinnati, No. 2	12.50 to 13.00
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	16.75 to 17.25
St. Louis, No. 1	12.25 to 12.75
St. Louis, No. 2	12.50 to 13.00

SPECIFICATION PIPE

Boston	9.00 to 9.50
Eastern Pa.	13.75 to 14.00
New York, deal	9.25 to 9.75

BUSHELING

Buffalo, No. 1	12.75 to 13.25
Chicago, No. 1	11.50 to 12.00
Cinn., No. 1 deal.	10.00 to 10.50
Cinn., No. 2	6.50 to 7.00
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 new deal	11.00 to 11.50
St. Louis, No. 1	9.50 to 10.00
Valleys, new No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston, dealers	6.50 to 7.00
Buffalo	9.25 to 9.75
Chicago	7.50 to 8.00
Cincinnati, deal	8.00 to 8.50
Cleveland	10.25 to 10.75
Detroit	7.75 to 8.00
Eastern Pa.	11.00
New York, deal	7.00 to 7.50
Pittsburgh	11.50 to 12.00
St. Louis	6.75 to 7.25
Valleys	11.25 to 11.75

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.50 to 6.00
Buffalo	11.25 to 11.75
Cincinnati, deal	9.00 to 9.50
Cleveland	10.75 to 11.25
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.00
New York, deal	7.00 to 7.50
Pittsburgh	11.50 to 12.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	6.00 to 7.00
Boston, chem.	8.50 to 9.00
Boston, dealers	6.25 to 6.75
Buffalo	11.25 to 11.75
Chicago	10.00 to 10.50
Cincinnati, deal	9.00 to 9.50
Cleveland	10.75 to 11.25
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50
New York, deal	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	9.50 to 9.75

PIPE AND FLUES

Cincinnati, deal	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.75 to 12.25
Cincinnati	9.50 to 10.00
Eastern Pa.	11.50 to 12.00
New York, deal	7.75 to 8.25
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	9.00 to 9.25
Buffalo	12.50 to 12.75
Cleve. over 10 in.	11.50 to 12.00
Detroit	11.00 to 11.50

FORGE SCRAP

Boston, dealers	8.50 to 9.00
Chicago	17.50 to 18.00
Eastern Pa.	13.50 to 14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.75 to 18.25
St. Louis	21.00 to 21.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	13.50 to 14.00
Chicago steelworks	10.75 to 11.25
Cleveland	12.00 to 12.50
Eastern Pa.	13.50
Pittsburgh	14.50 to 15.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 17.50
Boston, ship point	16.50 to 17.00
Buffalo	17.50 to 18.00
Chicago	18.50 to 19.05
Eastern Pa.	20.00 to 21.00
Pittsburgh	20.50 to 21.00
St. Louis	19.50 to 20.00

SHAFTING

Boston, ship point	14.50 to 15.00
Chicago	16.50 to 17.10
Eastern Pa.	19.00
New York, deal.	14.00 to 14.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.00 to 12.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	18.00 to 18.50
Chicago, iron	14.50 to 15.00
Chi., rolled steel	18.50 to 19.00
Cincinnati	12.00 to 12.50
N. Y., iron, deal	10.50 to 11.00
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	14.50 to 15.00
St. Louis, steel	15.75 to 16.25

NO. 1 CAST SCRAP

Birmingham, cup	12.00 to 13.00
Buffalo	14.50 to 15.00
Boston, textile	13.00 to 14.00
Chicago, mach.	15.70 to 16.25
Chicago, railroad	15.10 to 15.70
Chicago, agri.	13.45 to 14.00
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.00 to 15.50
Detroit, net, deal	11.25 to 11.75
East Pa. cupola	15.50 to 16.00
N. Y. cup. deal	10.85
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.50 to 15.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	14.50 to 15.00
St. Louis, No. 1	13.50 to 14.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	10.50 to 11.00
Cleve., breakable	11.50 to 12.00
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00 to 14.50
New York, deal	9.75 to 10.50
Pittsburgh	12.00 to 12.50

MALLEABLE

Boston, railroad	17.00 to 17.50
Buffalo	17.00 to 17.50
Chicago, agri.	14.75 to 15.25
Chicago, railroad	17.00 to 17.50
Cinn., R. R. deal	15.25 to 15.75
Cinn., agri., deal	14.25 to 14.75
Cleveland, rail	17.50 to 18.00
Detroit auto deal	15.00 to 15.50
St. Louis, rail	14.75 to 15.25

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.00 to 14.00
Boston	11.50 to 12.00
Buffalo	14.00 to 14.50
Chicago	15.00 to 15.50
Eastern Pa.	15.00
New York	10.50 to 11.00
St. Louis	14.25 to 14.75

LOCOMOTIVE TIRES

Chicago, cut	18.00 to 18.50
St. Louis, No. 1	14.50 to 15.00

LOW PHOS. PUNCHINGS

Chicago	16.00 to 16.50
Pittsburgh	18.50 to 19.50

higher offers elsewhere. Dealers are said to have refused an offer of a mill to pay $14.50 for No. 1 and $13 for No. 2 steel. The last sale of selected No. 1 was at $15.50. A stove plate sale at $13 is noted. Specialties are quiet.

New York, Feb. 25.—Worth Steel Co., Claymont, Del., which recently closed on about 1000 tons, is understood to be now figuring on a much heavier tonnage. While the general trend appears stronger, the situation is still spotty. A Harrisburg, Pa., consumer has recently closed on a moderate tonnage of skeleton steel at $11.25, delivered, a reduction of 25 cents, and is now refusing to pay more than $12.50 for yard steel, a reduction of 50 cents from its former price.

A substantial tonnage of No. 1 railroad steel is reported purchased by Lukens Steel Co., Coatesville, Pa., at $15.50, delivered. This is an advance of $1 and has the effect of increasing local dealers' buying market slightly to a spread of $10.50 to $11.50, New York.

Philadelphia, Feb. 25.—Iron and steel scrap is somewhat more active with a tendency toward higher prices. Dealers in some cases are paying $15, delivered, on melting steel for contracts but consumers do not appear to have paid above $14.50.

Pittsburgh, Feb. 25.—Scrap seems uncertain with the price trend awaiting the course of steel activity. Buying of heavy melting steel is restricted with prices nominally unchanged. A sale of compressed sheets has been made at $16.50. Railroad specialties continue strong and active. Blast furnace materials are quiet and easier. Heavy cast is lower.

Cleveland, Feb. 25.—Sentiment in iron and steel scrap is easier following announcement of a cut in steel operations by a large consumer. Prices continue unchanged with the offering price on No. 1 steel $14 to $14.50.

Cincinnati, Feb. 25.—Heavy melting steel failed to hold a recent 25-cent advance and reverted to $12.50 to $13. Although several grades of scrap, notably steel axles, are scarce, consumers are showing resistance to higher prices.

Detroit, Feb. 25.—Iron and steel scrap prices generally are unchanged, except for an advance of 50 cents in automobile malleable, to a spread of $15 to $15.50. The market appears to have a slightly firmer tone. Requirements from the Pittsburgh district continue broad and those from the Youngstown district are improved. Offerings of scrap by the automotive industry are little changed from early February, although still spotty. Some makers have curtailed schedules, which should contract offerings. Comparatively little scrap has been laid down on docks for water shipment.

St. Louis, Feb. 25.—Broadened inquiry for iron and steel scrap has resulted in a firmer undertone for several weeks. A general scarcity of supplies has also been a contributing factor. Specific advances from 25 cents to $1 per ton were recorded on a group of commodities, among them steel angle bars, iron car wheels, miscellaneous rails, rails for rolling and steel wheels and springs. Iron and steel car axles also continue in good demand and strong.

Birmingham, Ala., Feb. 25.—Steady movement of two or three items is to be noted, heavy melting steel being brought from the Southwest by consumers as well as by dealers. No. 1 cast and heavy melting steel are the more popular grades.

Toronto, Ont., Feb. 25.—Although there is a growing demand for iron and steel scrap in the Toronto and Montreal districts, business is listless. Heavy buying of machinery cast is reported, but otherwise the market is spotty. Some heavy melting steel and turnings are going into the Hamilton districts.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Semifinished Steel

Shipments Continue Good—Some Interest in Second Quarter

SEMIFINISHED STEEL PRICES, PAGE 86

Pittsburgh, Feb. 25.—New business in semifinished products is confined to occasional orders of a few hundred tons at a time, with the market continuing $33 for rerolling billets, sheet bars and slabs. Buying is moderate and specifications against contracts show little improvement since earlier in the month. Consumers are adjusting their purchases according to operating rates. Forging billets are quiet at $38. New business in wire rods takes $40 generally, although some irregularity in price is noted in some districts. Skelp continues quiet at 1.85c, Pittsburgh.

Philadelphia, Feb. 25.—Billet prices are $34, base, Pittsburgh, for rerollers and $39 for forging quality. Sales at lower figures appear restricted to other districts. The market is quiet.

Cleveland, Feb. 25.—While some buyers of sheet bars have made inquiries as to the price outlook for second quarter, makers are not yet quoting for that period. Current demand for sheet bars, billets and slabs continues fairly active, the leading merchant producer here operating at practical capacity. This interest lighted a fourth blast furnace this week largely to supply requirements of its own mills. Sheet bars, billets and slabs are being shipped at $33, Youngstown and Cleveland.

Youngstown, O., Feb. 25.—Sheet and hot-rolled strip mills are taking their quotas of bars and billets from local producers, but new purchases are made cautiously. Independent open hearths here, active at 80 per cent last week, have dropped to 74 per cent this week. Billets, sheet bars and slabs continue $33, Pittsburgh and Youngstown.

Chicago, Feb. 25.—Semifinished steel shipments are proceeding at a steady rate. Second quarter inquiry has appeared but little selling has been done. Prices are nominal on the basis of $35, Chicago, for sheet bars and commercial or rerolling billets, 4 x 4-inch base. Wire rods are $41, Chicago.

Operating Rates

Steel Operations Hold—Evidence of Lull—Pickup Expected by March

Pittsburgh—Steel production is steady, holding at 75 to 80 per cent. Finishing schedules generally are unchanged also. Sheet production continues at 70, with tin plate at 70 to 75. Strip output is 60 to 75 and pipe mills are the same at 40.

Buffalo—Open-hearth operations hold at 74 per cent. If automotive demand increases to an anticipated point, increases in operation may take place early in March. Mills are about evenly divided between single and double turn operation.

Cleveland—Open-hearth production is slightly lower with 29 of 34 furnaces producing. The leading interest still has 13 of 14 open-hearths going and has blown in another blast furnace to make all of its four stacks operating.

Chicago—Steelworks operations remain the same, at 88 to 90 per cent. Activity has been increased to 75 to 80 in sheets. Twenty-six of the 36 steelworks furnaces are blowing, with the leading interest having 17 out of 27 on. Specifications and inquiries indicate that the present operating rates are good for 60 to 90 days.

Youngstown, O.—Steel mill operations are slightly lower, due to a slackening demand from the Detroit automotive interests. Independent steel will be at about 74 and the Corporation between 65 and 70. While sheet production is better, strip and tinplate is also low. All bar mills are steady at 75, though no improvement in pipe mills is noted. Sales executives say that a sizeable order is immediately reflected on mill schedules, and that although the lull is temporary, buying from the auto makers is all hand-to-mouth.

Sir Humphry Davy, the noted English chemist and physicist, invented the safety lamp for use in coal mines in 1816. These lamps were put to use immediately. Davy took out a patent for this invention, preferring it to be open to the use of everyone.

Bars

Deliveries Further Deferred at Chicago—General Buying Steady but Expanding Slowly

CONSUMERS of soft steel bars are ordering material in small lots. At Chicago the excess of specifications over shipments is causing delay in delivery. Prompt tonnages are increasingly difficult to get there. At Pittsburgh less delay is encountered and incoming orders about equal last month. Prices are generally steady at established levels. Rumored concessions are not verified.

BAR PRICES, PAGE 85

Chicago, Feb. 25.—Bar mill deliveries are being extended to a range of two to six weeks. Sales offices are urging buyers to schedule ahead, as it is becoming more difficult to add emergency tonnage to current rollings. Implement and tractor plants are enjoying a steady run. Road machinery builders still are working on early seasonal orders, and are preparing to build up depleted stocks. The lighter automotive tonnage is reflected in operations of parts forgers and cold bar finishers, which are less than a year ago. Bar mill operations, at 85 to 90 per cent, are likely to continue unchanged until early March, when it is probable the rate may be increased. Soft steel bars are quoted at 1.95c, base, Chicago, with differentials to preferred industries. No verification has been obtained as to sales at a concession of $1. Second quarter inquiry appears, but mostly feelers as to prices. A growing desire for second quarter coverage is shown. Alloy bars are quoted at a base of 2.65c, mill.

New York, Feb. 25.—Steel bar demand appears to be recovering slowly with deliveries about three weeks. The market is moderately steady at 1.85c to 1.90c, Pittsburgh.

Pittsburgh, Feb. 25.—Activity in hot-rolled bars continues similar to that of preceding weeks. Requirements of most large consumers show little expansion since the first of the month although incoming tonnage compares favorably with that of a month ago. Mills are able to give prompt delivery on most sizes, backlogs being restricted by lack of forward buying. The price remains steady at 1.85c, Pittsburgh.

Youngstown, O., Feb. 25.—Much steadier operation characterizes the steel bar mills here of independents and Carnegie Steel Co., both being around 75 per cent. Demand for bars still is coming from a wide variety of sources, which is considered encouraging to continuance of good trade by mill managers. Steel bars are 1.85c to 1.90c, Pittsburgh.

Cleveland, Feb. 25.—Merchant steel bar demand has receded somewhat. Orders are less numerous and involve small amounts in harmony with consuming needs. Efforts to uncover second quarter interest have proved unsuccessful. The 1.85c, Cleveland, price holds.

Detroit, Feb. 25.—While the general market on soft steel bars continues on the basis of 1.85c, Pittsburgh, it is still possible to obtain material on the basis of 1.85c, Cleveland. Alloy steel bars to the general trade continue 2.65c, mill. Specifications for bars continue spotty and on the whole are expanding, but the rate of increase is much less than seemed probable a fortnight ago. Some suspensions for late February and early March shipments have been received, as automobile production is somewhat lower than two weeks ago. The prospect is for approximately the current rate of automobile production well into March, with a bulge in production late in March or early in April. Current shipments of bars and current automobile production, while considerably short of a year ago, are about normal compared with 1928

Philadelphia, Feb. 25.—Steel bar demand is well maintained. The market continues 1.85c to 1.90c, base, Pittsburgh, with occasional concessions on attractive lots.

Steel Employment Shows Gain for January

Washington, Feb. 25.—The bureau of labor statistics, department of labor, reports a decrease in general manufacturing employment of 1.8 per cent in January as compared with December.

Employment in the iron and steel industry showed an increase of 1.4 per cent in January compared with December while automobile employment gained 7.8 per cent. Employment in agricultural implement increased 3.2 per cent and shipbuilding was up 4.8 per cent.

The iron and steel industry had 5 per cent fewer employes in January this year than in January 1929.

Plates

Market More Active in East and Middle West—Oil and Car Building Industries Taking Tonnage

PLATE deliveries are lengthening in the Middle West and eastern districts, as backlogs have increased. Demands from the oil and car building industries are the mainstays of the market. Additional inquiries for oil refinery plates at Chicago have brought the total pending to 35,000 tons or more. Deliveries have started on the 100,000-ton order for the Texas-Chicago pipe line.

PLATE PRICES, PAGE 85

Chicago, Feb. 25.—Shipments on the 100,000-ton plate order for the Texas-Chicago pipe line project of the Doherty interests were started last week. It is not expected they will reach full volume until late in March or early in April. Reports indicate pipe line work will be active later this year. Fabricators have received inquiry for 11,000 tons of oil refinery plates in two lots for the Southwest. Inquiry for tank plates now pending totals 35,000 to 40,000 tons. Empire Oil & Refining Co. has increased its tank plate inquiry for East Chicago and Oklahoma to 7100 tons. Deliveries average three to six weeks. Universal mills have heavy car tonnage backlogs, while sheared plate shipments also are lengthening. Feelers are appearing for second quarter. The base price is 1.95c, Chicago.

New York, Feb. 25.—Greater activity is noted in plates. Some leading sellers now are quoting two to three weeks deliveries, compared with a week to ten days recently. Prices show more firmness at 1.90c to 1.95c, Coatesville. Oil companies continue substantial buyers, especially the Standard Oil Co. of New Jersey, the Shell Oil Co., and the Texas Co. The latter has closed on a tonnage for miscellaneous work in Texas. A recent inquiry for ten engines and five additional tenders for the Erie railroad will require about 600 tons. Baltimore has revived its inquiry for 500 tons for a 4,000,000-gallon tank.

Pittsburgh, Feb. 25.—Prospective work in steel plates is more favorable than the current rate of awards. Considerable tonnage will be required for unfilled freight car orders. Pending and prospective business in tanks and gas holders is large. The improved outlook for business in gas and oil pipe lines also is reflected in prospects for better plate business. The market continues fairly steady at 1.85c, Pittsburgh.

Cleveland, Feb. 25.—Plate specifications have shrunk. Orders are for small amounts, usually carloads. A Barberton, O., pipe line will take 670 to 1000 tons, depending upon whether ¼ or ⅜-inch is specified. The Belvoir boulevard pipe line here, 4500 tons of

48-inch, will probably be awarded this week. A Cincinnati machine tool builder wants 24 plates, 6 to 8 inches thick, weighing 14 or 15 tons each. Plates are 1.80c to 1.85c, base, Pittsburgh, with no announcement yet regarding second quarter.

Philadelphia, Feb. 25.—Plate demand continues fair. Prices are steady at 1.90c to 1.95c, base, Coatesville, on the bulk of sales, with occasional sales of attractive tonnages at less. The Philadelphia board of water supply has opened contractors' bids on 600 to 700 tons of 30-inch pipe and has postponed opening bids on 2000 tons of 11-foot pipe for approximately a month. The New Jersey water supply district is inquiring for 150 tons of plates for the Wanaque dam project.

CONTRACTS PENDING

500 tons, municipal tank, Baltimore; bids asked by Charles F. Good, department of works.
600 tons, locomotives and tenders, for Erie railroad.

Sheet Trade Shows Large Gains for January

Daily average sheet sales reported by independent mills for January increased 62 per cent over those of December. The average rate for production gained 60 per cent, and for sales 35 per cent. The National Association of Flat Rolled Steel Manufacturers' complete report for January follows:

	Net tons	Per cent of capacity
Total sales for January	382,122	101.8
Total production	291,529	77.6
Total shipments	241,677	64.4
Unfilled tonnage as of Feb. 1..	558,412	146.2
Approximate finished stock on hand awaiting shipments....	117,584	31.3
Approximate in stock, unsold	73,948	19.7

Total sheet capacity of the United States for January, 1930, was approximately 556,000 net tons. The capacity on which the above figures are based is 375,500 net tons.

A comparison of total monthly sales, production and shipments follows:

	Sales	Production	Shipments
January, 1929	438,390	391,404	362,229
February	389,496	326,468	325,848
March	464,297	364,202	363,648
April	398,206	375,256	377,274
May	279,783	393,430	392,336
June	307,911	337,841	347,989
July	337,222	323,905	344,676
August	282,107	366,734	365,649
September	274,568	302,490	301,330
October	258,810	319,660	291,135
November	134,391	204,071	207,200
December	234,599	181,916	178,575
January, 1930	382,122	291,529	241,677

Daily averages follow:

	Sales	Production	Shipments
January, 1929	14,142	12,626	11,685
February	13,910	11,659	11,637
March	14,977	11,748	11,731
April	13,273	12,508	12,576
May	9,025	12,691	12,656
June	10,264	11,261	11,560
July	10,878	10,448	11,118
August	9,100	11,518	11,795
September	9,152	10,083	10,046
October	8,349	10,312	9,391
November	4,480	6,802	6,907
December	7,568	5,868	5,760
January, 1930	12,326	9,404	7,796

Pipe

Utility Buys 14,000 Tons—Municipal Purchases Grow—Prices Firm—Pipe Lines to Come Out

LARGEST utility letting of the year took place at New York, 14,000 tons of cast being divided among three makers. Municipal buying also grows. Glendale, Calif., awarded 1545 tons; Wisconsin towns distributing 31,000 lineal feet; Duluth and Minneapolis are tabulating bids on 800 and 400 tons, respectively; and Brockton, Mass., is closing bids on 1575 tons.

PIPE PRICES, PAGE 86

Pittsburgh, Feb. 25.—Line pipe awards still are lacking but the tubular market continues active from the standpoint of prospective work of this nature. No further developments are heard on the Texas-Chicago line, largest of the pending projects, involving more than 250,000 tons of steel pipe. Oil companies are becoming interested in the possibilities of transporting gasoline by pipe lines, and the Barnsdall Corp. is understood to be considering such a line from Okmulgee, Okla., to Milwaukee. Tonnage involved in such a line and in oil lines is less than in the gas lines. The proposed line of the Sun Oil Co. from eastern Pennsylvania to Pittsburgh and Ohio points will require 25,000 tons of 6-inch or 40,000 tons of 8-inch. The Columbia Gas & Electric Corp., line will be 20-inch or 22-inch. Activity in standard pipe and seamless material shows little change, generally continuing light. Locomotive and boiler tubing make a relatively better showing but mechanical tubing demand is off seasonally. Mill operations continue about 40 per cent.

Boston, Feb. 25.—Pipe tonnage remains good, with private business holding up actively. Prices are firmer, 4-inch being quoted $46.10, common Boston freight rate points, and 6-inch, $42.10, with a $4 differential for class A and gas pipe. Taunton, Mass., awarded 200 tons of 6-inch, and Meriden, Conn., contracted for its 1930 requirements. Lawrence and Brockton, Mass., opened bids on 200 and 900 tons, respectively.

New York, Feb. 25.—Three foundries divided about 14,000 tons of 4 to 12-inch cast pipe for the Allied Power & Light Corp. placed through Stevens & Wood, one of the largest utility lettings thus far this year in this territory. Bids were opened Feb. 25 on 1575 tons of 6 to 24-inch, more than 1500 tons being 24-inch, for Brockton, Mass. Prices hold fairly firm. Carload shipments are heavier. Foundries are active on large sizes.

Manufacturers of standard buttweld pipe report poor demand from jobbers. Business is under that of a year ago.

Cleveland, Feb. 25.—Standard full weight merchant pipe repeat orders have not commenced in volume. Jobbers await a continuance of good weather to bring about building operations with consequent heavy turnover of their stocks. Occasional carloads are noted. A pipe line is up for Barberton, O., taking 670 to 1000 tons.

Youngstown, O., Feb. 25.—Building pipe requirements appear to have joined oil country goods in slumping off somewhat, and demand from construction sources seems spotty. However, buttweld mills are operating around 65 per cent, with mills making the larger sizes of pipe running at about 35 to 40 per cent.

Chicago, Feb. 25.—Private buying of cast pressure pipe is picking up steadily. The low bid on Duluth's 800 tons of 4 to 12-inch was about $47, delivered. Bids also have been tabulated for 400 tons of 24-inch pipe for Minneapolis. Prices for 6 to 24-inch are steady $45.20 to $46.20, delivered, Chicago.

Birmingham, Ala., Feb. 25.—Increased pressure pipe production tells of better demand. Trade is better than a year ago and reports are favorable as to larger orders later. Demand runs strong for centrifugal, monocast and other classes. Base prices remain unchanged, $37 to $38 on 6-inch and over size. Soil pipe trade has been quiet, but a little improved.

CONTRACTS PLACED

14,000 tons, 2 to 12-inch, for Allied Power & Light Corp., New York, through Stevens & Wood, engineers, to United States Pipe & Foundry Co., American Cast Iron Pipe Co., and McWane Cast Iron Pipe Co.
300 tons, various sizes, airport, Barren Island, N. Y., to United States Pipe & Foundry Co.
200 tons, 6-inch for Taunton, Mass., to United States Pipe & Foundry Co.
190 tons, 10-inch class 250 and 16-inch class 200, Alhambra, Calif., to United States Pipe & Foundry Co.
Unstated tonnage, 17,000 lineal feet of 6 to 16-inch centrifugal cast iron pipe in varying lengths, for Wauwatosa, Wis., to American Cast Iron Pipe Co., at $24,010.
Unstated tonnage, 10,000 lineal feet of 6-inch centrifugal cast pipe, for Appleton, Wis., to James B. Clow & Sons at $68.50 per 100 feet.
Unstated tonnage, 4000 lineal feet of 6-inch for Viroqua, Wis., to McWane Cast Iron Pipe Co.
Unstated tonnage, 1930 requirements, Meriden, Conn., to Warren Foundry & Pipe Co.

CONTRACTS PENDING

1575 tons, 6 and 24-inch, including more than 1500 tons, for Brockton, Mass.; bids in.
1545 tons, 6 to 30-inch class B, C and 250 Glendale, Calif.; bids opened.
900 tons, 24-inch for Brockton, Mass.; bids opened Feb. 25.
800 tons, 4 to 12-inch for Duluth; low bid about $47, delivered.
205 tons, 4 and 6-inch class B, improvement

of Compton avenue, Compton, Calif.; bids opened.
200 tons, 4 to 8-inch for Lawrence, Mass.; bids opened Feb. 28.
194 tons, 10-inch class B, improvement of Ridgeway road, Santiago, Calif.; bids Mar. 10.
189 tons, 2 to 8-inch class C, improvement Fifty-fourth street, San Diego, Calif.; no bids received.
147 tons, 10-inch class 150 for United States army, Manila, P. I.; bids March 10.
108 tons, 2 to 6-inch class 150, Tempe, Ariz.; bids opened.
Unstated tonnage, 100 feet 8-inch, 4152 feet 6-inch, 12,382 feet 4-inch and 780 feet 2-inch cast pipe water mains, with 27 fire hydrants and 75,000-gallon tank on 125-foot tower, Lewisville, Ark.; bids Feb. 28.

STEEL PIPE

670 to 1000 tons, pipe line for Barberton, O.; bids about to be asked.

Tin Plate

Specifications Keep Mills Operating at 70 to 75 Per Cent

TIN PLATE PRICES, PAGE 86

Pittsburgh, Feb. 25.—Tin plate specifications continue to improve moderately and business now on books compares favorably with that of a year ago. Backlogs are sufficient to provide mills with steady operations for several weeks ahead although there is little urgency on the part of buyers for extra prompt delivery. Mill operations are unchanged at 70 to 75 per cent. The market continues $5.25 per 100-pound base box, Pittsburgh.

New York, Feb. 25.—While the tin plate market is devoid of important inquiries, trading is fairly good. Specifications are coming out more freely and some of the smaller consumers who do not contract over a long period have been buyers recently. The price is $5.25 per 100-pound base box, Pittsburgh.

Youngstown, O., Feb. 25.—Tin plate makers are experiencing one of the best spring runs of business in some years. Demands of canners are extraordinarily heavy, and mills have received such large additional orders from that source good operations are assured for several months. Canners are preparing for a large pack during the summer and autumn.

Worth Steel Co. Will Produce Sheets

Philadelphia, Feb. 25.—Worth Steel Co., Claymont, Del., is inquiring for equipment for a sheet rolling plant to be installed in one of its present buildings. Product is to include blue annealed sheets and later other grades. Production is expected to be under way the latter part of this year.

Valley Plants at 75

Youngstown, O., Feb. 25.—Youngstown district fabricators are operating at 75 per cent. General Fireproof Co. is at a 90 per cent rate, with sales equaling those of last year, when records were established. Truscon Steel Co. is expanding its operations with the approach of the building season. Niles Pressed Steel Co. is at 70 per cent.

Sheets

Market Proves Irregular—Common Grades in Fair Demand—Pittsburgh Business Slower

DEMAND for sheets appears more irregular than prices. Increasing requirements for common grades have enabled Chicago district mills to move operations up to 75 to 80 per cent, while the Pittsburgh district reports a diminished volume of business and mills active at 70 to 75 per cent. The eastern market is busier. Northern Ohio mills need orders and releases.

SHEET PRICES, PAGE 85

Pittsburgh, Feb. 25.—New sheet business is at reduced rate. Incoming tonnage so far in February is ahead of the January period, although shipments to the automotive industry show only a slight increase since a month ago. Sheet requirements of other consumers are fairly steady. A few buyers are seeking protection on future tonnage at current prices. Minimum prices generally are 2.65c, base, Pittsburgh, for black, 3.30c for galvanized, and 2.10c and 2.25c for blue annealed. The lack of forward bookings continues to restrict backlogs although this enables mills to give fairly prompt delivery. Operations average 70 to 75 per cent.

Effective immediately, roofing sheets will be sold by the square instead of by the pound.

Buffalo, Feb. 25.—District sheet mills continue to operate at 70 per cent. February sales exceed those of January by a good margin.

Chicago, Feb. 25.—Sheet mill operations are 75 to 80 per cent, a gain of about five points over a week ago. An increase in manufacturing demand for black sheets is noticeable. Blue annealed specifications retain their vigor, while moderate gains in the Northwest and West are reported for galvanized and other grades. Mills have postponed announcement of second quarter prices until later this week.

Cleveland, Feb. 25.—Sheet tonnage has dropped and mills need specifications. Unless releases multiply the carryover into second quarter will be large. Inquiries for prices for that period are not appearing here and mills planning to make prices stronger for that period are reluctant to take the initiative. A few small orders for black sheets from barrelmakers carried a 2.65c, base, Pittsburgh price, whereas some buyers have done 2.55c. Autobody sheet demand also has slumped. The 3.90c price prevails. That price also has become more general for metal furniture sheets. The usual price for galvanized is 3.30c. Jobbing mills quote 2.25c on No. 13 gage blue annealed but continuous mills go to 2.15c and 2.10c.

New York, Feb. 25.—Sheet buying is more active. One leading mill reports February tonnage so far is in excess of that of a year ago and that the month should gain over January. Prices show fewer irregularities. Galvanized sheets appear fairly well established at 3.30c, Pittsburgh, with a certain amount of small business going at 3.40c. Black sheets are 2.65c, Pittsburgh; blue annealed plates 2.10c, and blue annealed sheets 2.25c.

Cincinnati, Feb. 25.—Second quarter quotations by the leading sheet mill in this district are: 24-gage black 2.75c, base, Pittsburgh; 24-gage long terne and 20-gage autobody, 3.90c; furniture sheets, 4.00c; 10-gage light plates, 2.10c.

Detroit, Feb. 25.—The first inquiry for second quarter sheets has been issued, probably leading to an early determination of prices. Doubtless an effort will be made by producers to effect advances. Black sheets continue to go to users on the basis of 2.55c, Pittsburgh, and supplementary needs for first quarter delivery could be placed at this figure, but it is expected that 2.65c will be the minimum asked for second quarter. Until black sheets are advanced, makers of autobody sheets feel they cannot ask for 4.00c, Pittsburgh, which they want. At present autobody sheets are 3.80c to 3.90c. Specifications for March shipments have been narrower than in the early part of February. Some releases for March shipments have been suspended because of a slight decline in automobile production. February shipments into the district will show a moderate decrease over January, but at this juncture March will not develop as great an increase as looked for two weeks ago.

St. Louis, Feb. 25.—Sheet demand is moderately active. Users' stocks are small, and it is expected a number of important interests will be in the market soon. Car builders are ordering out material in good volume.

Philadelphia, Feb. 25.—Sheet demand has tapered off slightly. Prices generally are unchanged, except that special lots occasionally bring out concessions.

Youngstown, O., Feb. 25.—Independent sheet mill operations this week average 78 per cent, against 64 per cent last week. Some makers of the common grades have specifications to run at present operating rates for ten days to two weeks. Makers of autobody sheets are booked ahead for three weeks to a month. Demand for furniture materials also is fairly satisfactory. Common black sheets bring 2.65c to 2.75c, autobody 3.90c, furniture 4.00c, blue annealed 2.20c to 2.25c, and galvanized 3.30c to 3.35c.

Structural Shapes

Absence of Speculative Building Restricts Inquiry in East—Awards Include 7700-ton Subway Section—Prices Remain Firm

SPECULATIVE building is dwindling in New York, which means that apartment house construction is retrograding, only one 2000-ton job being let. General inquiry has lost some of its recent snap but awards at 36,880 tons, including a 7700-ton subway, a 3500-ton roadway and 4400 tons of hangars, exceed last week's total of 34,405 tons and compare with 60,662 tons the week before. A 2300-ton utility building was let in St. Louis. Cleveland reports favorable inquiry rate with action deferred on larger projects. A 3000-ton hotel job closes March 3 at Akron, O. United States army has 43 hargars up, taking 8600 tons. Mills operate higher. Fabricators have good backlogs, notwithstanding heavy shipments. Prices are somewhat steadier.

STRUCTURAL SHAP E PRICES, PAGE 85

Chicago, Feb. 25.—Structural mill deliveries, largely because of car shop specifications for lighter material, are becoming more extended, the delivery range now being three to six weeks. Awards totaled about 4000 tons, including much highway and railroad bridge work. Inquiries are 3000 to 4000 tons. In addition to highway programs of a number of the North Central states, Nebraska has a $3,000,000 highway and bridge schedule for 1930. Bids will be received for the 2200 tons for the Morrison hotel addition on March 7. About 600 tons will be used for the state hospital buildings at Manteno, Ill. Plain material prices are 1.95c to 2.00c, Chicago.

The Chicago World's Fair committee decides to begin construction of two more exposition buildings this year, in addition to administration and transportation buildings. The cost of the four structures is to be $4,000,000.

Boston, Feb. 25.—Shape awards have once more slumped and appear confined to small lots. A 450-ton terminal shed at Portland, Me., was awarded Blaw-Knox Co. A school at Lynn, Mass., calls for 700 tons.

New York, Feb. 25.—Structural lettings slumped this week. New work up for figures has also declined, but tonnage involved in pending projects expected out in the next few weeks is large. Bids will be opened next week on another subway section which will include 36,000 tons of cast iron segments for an East river tunnel. Speculative building is light, reducing apartment house construction. Mills continue to operate heavier than 80 per cent with fair backlogs which are gradually being reduced. Business on fabricators' books is also heavy, but unevenly divided. Prices are somewhat steadier, with 2.045c holding for medium tonnages.

Philadelphia, Feb. 25.—Structural shape demand is somewhat smaller, Eastern mills operate 75 to 85 per cent. Pending work includes 1500 tons for a city hall concourse here and 1000 tons for a postoffice at Scranton, Pa. Prices continue easy with general market 1.80c to 1.90c, base, nearest mill, and lower prices done on attractive tonnages.

Pittsburgh, Feb. 25.—Structural shape fabricators are working off backlogs, awards over the past several weeks having fallen below shipments. Unfilled tonnage, however, still is seasonally high. Awards in this district continue restricted with few large tonnage inquiries noted. Plain shape specifications so far this month approximate those for the corresponding January period and are seasonally heavy. The market generally is 1.80c to 1.85c, Pittsburgh.

Cleveland, Feb. 25.—A number of small projects has been awarded but action on larger jobs still is referred. Approach of spring has brought about the issuance of several more inquiries on which early letting is expected. Bids were extended to March 3 on the 3000-ton Mayflower hotel job at Akron, O. Mill specifications are fair, being somewhat under the January rate. Plain material is held at 1.80c to 1.85c, Pittsburgh, with no announcement yet for second quarter.

Detroit, Feb. 25.—Competition for structural business, of which little is going, has never been keener in this district. The bulk of business is going to the larger fabricators. Not for several years has so little tonnage been in prospect for spring delivery. More mills are endeavoring to maintain structural shapes on a basis of 1.85c, Pittsburgh.

Birmingham, Ala., Feb. 25.—Structural shapes are in good demand and several fabricating shops are active. Many small orders have been received and specifications are in sight for much larger tonnages. Building activity appears to be brisk. Virginia Bridge & Iron Co. was awarded 1000 tons for the new sheet and other finishing mills for the Gulf States Steel Co., Alabama City, while the Ingalls Iron Works Co. received 700 tons.

CONTRACTS PLACED

7700 tons, subway, route 110, section four, New York, to American Bridge Co.

4400 tons, 22 United States army hangars, San Antonio, Tex., to Belmont Iron Works.

3500 tons, shapes and plates, additional tonnage for roadway for Hudson river bridge, New York, to McClintic-Marshall Co.

2300 tons, building, Union Electric Light & Power Co., St. Louis, to Mississippi Valley Structural Steel Co.

2000 tons, apartment, Christopher street, New York, to unstated interest.

1000 tons, building, Southwestern Bell Telephone Co., St. Louis, to Mississippi Valley Structural Steel Co.

Awards Compared

	Tons
Awards this week	36,880
Awards last week	34,405
Awards two weeks ago	60,662
Awards this week in 1929	34,439
Average weekly awards, 1930	34,818
Average weekly awards, 1929	38,603
Average weekly awards, Jan.	26,666
Total awards to date, 1929	301,359
Total awards to date, 1930	313,359

1000 tons, building, R. C. A. Victor Co., Camden, N. J., to Belmont Iron Works.

1000 tons, sheet mill and other buildings for Gulf States Steel Co., Alabama City, Ala., to Virginia Bridge & Iron Co.

750 tons, freight building, Chicago, Milwaukee, St. Paul & Pacific railroad, Green Bay, Wis., 450 tons to Wisconsin Bridge & Iron Co., and 300 tons to McClintic-Marshall Co.

700 tons, for group No. 1 of sheet mill, Gulf States Steel Co., Alabama City, Ala., to Ingalls Iron Works Co.

700 tons, bridge work, Chicago Great Western railroad, to McClintic-Marshall Co.

700 tons, highway bridge at Thackerville, Okla., to Kansas City Structural Steel Co.

690 tons, bridge, Norfolk & Western railroad, Hiawassa, Va., to American Bridge Co.

675 tons, boiler house and kitchens, State hospital, Manteno, Ill., to Rochester Bridge Co.

600 tons, high school, Beaver Falls, Pa., to Guibert Steel Co.

545 tons, bridges, St. Louis-San Francisco railroad, to Virginia Bridge & Iron Co.

500 tons, 12-story apartment hotel, Ninety-first street and Madison avenue, New York, to Bethlehem Fabricators Inc.

500 tons, penstocks, Allis-Chalmers Mfg. Co., Milwaukee, to unstated fabricator.

450 tons, Union station, Omaha, Nebr., to Omaha Steel Works, in addition to previous tonnages awarded.

450 tons, shed for Portland Terminal Co., Portland, Me., to Blaw-Knox Co.

400 tons, public school No. 138, New York, to Lehigh Structural Steel Co.

400 tons, bridges, Boston & Maine railroad, to Bethlehem Steel Co.

400 tons, building, Walker Vehicle Co., Chicago, to McClintic Marshall Co.

375 tons, bridge, Harlem river, New York, to McClintic-Marshall Co.

350 tons, addition, Southern Phosphate Co., Bartow, Fla., to Nashville Bridge Co.

340 tons, telephone exchange building, Pittsburgh, Bell Telephone Co., to McClintic-Marshall Co.

315 tons, garage, East Ninety-fourth street, New York, to Kues Bros. Iron Works.

300 tons, building, Department of Plants and Structurals, New York, to McClintic-Marshall Co.

300 tons, warehouses, Procter & Gamble Co., Staten Island, N. Y., to Levering & Garrigues Co.

300 tons, river crossing towers, Phoenix Utility Co., New Orleans, to Nashville Bridge Co.

250 tons, apartment, Parkview avenue, Bronxville, N. Y., to Prudential Iron Works.

250 tons, office building, Salinas, Calif., to Judson-Pacific Co.

225 tons, plant, Libbey-Owens Glass Co., Toledo, O., to Flint Structural Steel Co.

215 tons, South Gate high school, Los Angeles, to Jones & Laughlin Steel Corp.

200 tons, apartment, Park avenue, New York, to Jones & Laughlin Steel Corp.

200 tons, armory addition, Brooklyn, N. Y., to the Winters Co.

180 tons, St. Gertrude's church, Glenwood and Granville avenues, Chicago, to Midland Structural Steel Co.

175 tons, apartment, East Orange, N. J., to Jones & Laughlin Steel Corp.

160 tons, additions, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., to Baumann Iron Works.

150 tons, bridge spans, Illinois Central railroad, to unstated fabricator.

150 tons, service building, Chevrolet Motor Co., Baltimore, to American Steel Engineering Co.

140 tons, two factories on Pitt street, Los Angeles, to McClintic-Marshall Co.

140 tons, dairy building, Hamden, Conn., to Bethlehem Fabricators Inc.

105 tons, alterations, Sheriff street market, Cleveland, to Republic Structural Iron Works.

100 tons, boiler supports, Western Electric Co., Chicago, to A. Bolter's Sons.

100 tons, four bridges, Boston & Albany railroad, Boston, to New England Structural Co.

100 tons, Benjamin apartment, Lake avenue, Cleveland, to Republic Structural Iron Works.

100 tons, warehouse, Louisville & Nashville railroad, Pensacola, Fla., to Ingalls Iron Works, through W. Horace Williams Co., New Orleans, general contractor.

100 tons, Agnes Scott college, Decatur, Ga., to Decatur Building & Iron Works, Decatur, through Williams Construction Co., general contractor.

100 tons, addition, Fisher Flouring Mills, Seattle, to Wallace Bridge & Structural Steel Co.

100 tons, school, Patchogue, N. Y., to Berkshire Iron Works.

CONTRACTS PENDING

8600 tons, 43 United States army hangars; bids to be taken soon.

4000 tons, shapes, bars and plates, Chesapeake & Ohio railroad, representing fourth quarter requirements.

3000 tons, Mayflower hotel, Akron, O.; bidding time extended to March 3.

2000 tons, apartment, Seventh avenue and Christopher street, New York.

1900 tons, office building, Des Moines, Iowa.

1500 tons, city hall concourse, Philadelphia.

1000 tons, post office, Scranton, Pa.

1000 tons, power house, District of Columbia; Stone & Webster Inc. taking bids.

700 tons, school, Lynn, Mass.

650 tons, garage, West Sixty-sixth street, New York.

500 tons, state school building, Wassaic, N. Y.

500 tons, Hibernia avenue viaduct, Milwaukee.

450 tons, apartment, West Twenty-first street, New York.

400 tons, service building, Western Reserve university, Cleveland; general contract reported going to Lundoff-Bicknell Co.

400 tons, building, Sand Point navy airport, Seattle; bids March 12.

400 tons, plant, Chain Products Co., Cleveland; bids in.

400 tons, building, Ohio Injector Co., Wadsworth, O.; bids being taken.

400 tons, building, Warner Bros., West Fifty-Fifth street, New York.

150 to 200 tons, addition, Cleveland Press Publishing Co., Cleveland; bids being taken.

125 tons, library storage building, Westchester avenue, New York.

100 tons, faculty clubhouse, Harvard university, Cambridge, Mass.

Unstated tonnage, sewage treatment works, Rocky River, O.; plans to come out later from Sanitary Engineer William J. Rogers.

Unstated tonnage, factory building, Kroehler Mfg. Co., 1044 Doan avenue, Cleveland; plans to be issued by J. O. Taylor, Fisher building, Chicago, architect and engineer.

Unstated tonnage, parish house, St. George church, Flushing, Long Island, N. Y.

Unstated tonnage, school and convent, Irvington, N. J.

Unstated tonnage, Swedish Baptist church, West Sixty-first street, New York.

Unstated tonnage, court buildings, Queens, N. Y.

Unstated tonnage, grade and high school, Highland Falls, N. Y.

Concrete Bars

Inquiries Mount as Open Weather Arrives—Jobs in 500-1500-ton Range Grow

APPROACH of spring weather has brought out more buying and more inquiry. A 1500-ton plant is reported let in New Jersey and a 1200-ton station was awarded at Dayton, O. A 1000-ton filtration plant is up at Erie, Pa. Pleasing inquiries are coming out for subways, schools, bridges, etc. Attractive road work in Middle Western states too is about to be let.

REINFORCING BAR PRICES, PAGE 85

Chicago, Feb. 25.—Building inquiry involving reinforcing bars shows little improvement. Small tonnage jobs predominate. A local fabricator was awarded 1200 tons for the Union station at Dayton, O. Plans are expected to be out soon for a $500,000 engineering building and a $400,000 commercial building for Notre Dame university, South Bend, Ind. The Chicago, Rock Island & Pacific railroad viaduct, at Joliet, Ill., took about 500 tons, instead of the estimated 800 tons. This was divided among three fabricators. Prices for larger tonnages have not been adequately tested in recent weeks.

Boston, Feb. 25.—Conditions are uniformly improved in concrete bars. The 400-ton hospital at Newington, Conn., went to a New York interest. A telephone exchange here will take 400 tons and a school at Lynn, Mass., and a hospital at Lexington, Mass., 200 tons each. Small lots awarded in the past week aggregated 150 tons. A garage, 165 tons, went to Concrete Steel Co.

New York, Feb. 25.—Concrete reinforcing bars are slightly more active. Prices are steadier, but keen competition tends toward some shading. The market nominally is 2.44c, carload shipments, New York. A large volume of work is up for figures. One of the several subway sections pending, about 350 tons, went to McClintic-Mashall Co. while two bank buildings calling for 60 tons each were let to the National Bridge Co.

Buffalo, Feb. 25.—Inquiry for reinforcing bars continues to mount. A 1000-ton lot is listed this week for the Erie, Pa., filtration plant, formerly estimated at 500 tons. Bridge, school and road projects announced during the past three weeks here, including the Erie job, now total more than 3500 tons, the bulk of this business being scheduled for early award. Producers look for substantial increases in output next month. Prices are nominally unchanged.

Pittsburgh, Feb. 25.—Reinforcing bar awards fail to improve, although a substantial tonnage is involved in pending work. Mill business makes a fair comparison with that of January and also approximates the volume of a year ago. Inquiry is steady and prospective work that as yet has not come out for bids indicates improved business over the next two months. The market continues 1.95c, Pittsburgh, for stock lengths and 2.20c for cut lengths.

Cleveland, Feb. 25.—Awards in concrete bars are light. Many jobs are under contemplation, however, which presage an active spring and summer. A road letting scheduled at Columbus, O., involves more than $2,000,000 and will take several hundred tons. The Dayton, O., telephone building requires 400 to 500 tons, and a similar tonnage is involved in the Mayflower hotel at Akron, O. An industrial building at Wadsworth, O., 300 tons, is reported let to Jones & Laughlin Steel Corp., through an Akron, O., jobber.

Awards Compared

	Tons
Awards this week	8,430
Awards last week	8,750
Awards two weeks ago	5,513
Awards this week in 1929	3,490
Average weekly awards, 1929	5,849
Average weekly awards, 1930	4,863
Average weekly awards, Jan.	3,393
Total awards to date, 1929	55,303
Total awards to date, 1930	43,769

CONTRACTS PLACED

1500 tons, buildings, Western Electric Co., Kearny, N. J., reported placed with McClintic-Marshall Co.

1200 tons, Union station, Dayton, O., to Kalman Steel Co.

600 tons, building, Washington Athletic club, Seattle, divided between Pacific Coast Steel Co. and Northwest Steel Rolling Mills.

500 tons, subway, route 110, section four, New York, to Concrete Steel Co.

500 tons, viaduct, Chicago, Rock Island & Pacific railroad, Joliet, Ill., divided among Concrete Engineering Co., Truscon Steel Co. and Kalman Steel Co.

400 tons, Veterans' hospital, Newington, Conn., near Hartford, Conn., to Tidewater Steel Co.

400 tons, subway, route 108, section 5, New York, to McClintic-Marshall Co.

300 tons, Fourteenth avenue south, bridge, Seattle, to Northwest Steel Rolling Mills.

300 tons, viaduct approach for bridge near Secaucus, N. J., to Kalman Steel Co.

300 tons, industrial building at Wadsworth, O., reported let to Jones & Laughlin Steel Corp., through Akron, O., jobber.

300 tons, hospital and tunnels, New York, to Carroll-McCreary & Co. Inc.

300 tons, pottery factory at Trenton, N. J., to Truscon Steel Co.

250 tons, junior high school, Moline, Ill., to Concrete Steel Co.
225 tons, Rogue river bridge, Oregon, to unstated interest.
175 tons, Washington bridge, Harlem river, New York, to Kalman Steel Co.
165 tons, garage, Hupmobile Co., Boston, to Concrete Steel Co.
160 tons, Orthopedic hospital, Chicago, to Olney J. Dean Co.
160 tons, building, Central Hanover bank, Church and Franklin streets, New York, to National Bridge Co.
160 tons, building, New York Trust Co., Fifth avenue and Fifty-seventh street, New York, to National Bridge Co.
150 tons, city hall concourse, Philadelphia, to Concrete Steel Co.
125 tons, Walton high school, Bronx, N. Y., to Carroll-McCreary & Co. Inc.
100 tons, Agnes Scott college, Decatur, Ga., to Truscon Steel Co., through Williams Construction Co., Atlanta, Ga., general contractor.

CONTRACTS PENDING

1000 tons, previously reported 500 tons, filtration plant for Erie, Pa.; bids soon.
600 tons, post office, Milwaukee.
400 tons, exchange building, New England Telephone Co., Boston; bids March 11.
400 to 500 tons, telephone building, Dayton, O.; bids in.
400 to 500 tons, Mayflower hotel, Akron, O.; bidding time extended to March 3.
250 tons, two piers, Central-Lorain bridge, Cleveland; Walsh Construction Co., low bidder; originally thought to involve 400 to 500 tons.
200 tons, school, Lynn, Mass.
200 tons, hospital addition, Lexington, Mass.
192 tons, paving in San Joaquin county, Sacramento, Calif.; bids March 12.
150 tons, apartment building, Chicago; A. S. Hecht, architect.
125 tons, state bridge and highway, Virginia.
120 tons, bridge in San Joaquin county, Sacramento, Calif.; bids March 12.
108 tons, bridge in Siskiyou county, Sacramento, Calif.; bids opened.
100 tons, building, Chain Products Co., Cleveland; bids in.
100 tons, addition, Cleveland Press Publishing Co., Cleveland; bids going in.
Unstated tonnage, $2,000,000 road program; bids opened Feb. 25 at Columbus, O.

Iron Ore

Producers Show More Confidence in Business for 1930

IRON ORE PRICES, PAGE 86

Cleveland, Feb. 25.—Business from the viewpoint of Lake Superior iron ore producers looks much better today than it did a month ago. Some of the forecasters in the ore industry who were then predicting a movement of 55,000,000 tons of ore this year now believe it will be nearer 60,000,000 tons. They say the situation at iron and steel plants is much better than is generally appreciated and the outlook is steadily improving. A few preliminary inquiries have been received as to prices for the season but real negotiations have not been started. Supplies at lower lake docks and blast furnaces Feb. 1 were 3,339,293 tons more than on Feb. 1, 1929, as shown by the following report from the Lake Superior Iron Ore association:

	Tons
Ore consumed in December	4,076,432
Ore consumed in January	4,101,015
Increase in January	24,583
Ore consumed in January, 1929	5,195,034
Ore on hand at furnaces Feb. 1, 1930	27,674,534
Ore on Lake Erie docks Feb. 1, 1930	5,853,864
Total at furnaces and Lake Erie docks Feb. 1, 1930	38,528,398
Total Feb. 1, 1929	30,189,105

Rails, Cars

Cars More Extensive Than in 1929—4500 Pending—Rail Buying Finished—Engines Active

FREIGHT car purchases so far this year are possibly 1000 units ahead of the comparable 1929 period. Only about 4500 are actively pending, including 2500 refrigerator cars. Miscellaneous car and coach awards for current week are fairly numerous, topped by 100 passenger cars for Pullman Co. Rail mills probably will operate full until midsummer, although buying is largely completed.

RAILROAD TRACK PRICES, PAGE 86

Chicago, Feb. 25.—Primary rail buying for the 1930 season is nearly complete. Rail mills in this territory operate at near capacity on backlogs which will keep them busy at about that rate until midsummer. Track fastenings sales in the week just closed were 3000 to 4000 tons. Inquiry is active for 1000 refrigerator cars for the American Refrigerator Transit Co., and it is expected Pacific Fruit Express Co. will have inquiry out short for at least 1500 refrigerator cars. Nothing definite has been heard as to plans of the Burlington for further car purchases, and no official information is given as to an inquiry soon from the Illinois Central. It is reported in this market that freight car awards so far this year are about 1000 units ahead of last year.

New York, Feb. 25.—New car inquiry continues restricted, with possibly 4500 freight cars actively pending. Awards also are light, with 100 passenger cars for the Pullman Co. leading. Locomotive inquiry includes 25 locomotives and 20 extra tenders for the Union Pacific and 10 engines and five extra tenders for the Erie.

CAR ORDERS PLACED

Canadian Pacific, 13 coach frames, seven smoking car frames and eight dining car frames to National Steel Car Corp. and 14 parlor car frames, five compartment car frames, two single room overnight sleeping car frames and 50 sleeping car frames to Canadian Car & Foundry Co.; the 50 sleeping car frames were reported in last week's issue as 50 sleeping cars; this equipment is in addition to 500 freight cars and 10 baggage cars previously noted as placed by this railroad.
Chicago, Rock Island & Pacific, 14 miscellaneous coaches, to Pullman Car & Mfg. Corp.
Fleischmann Transportation Co., one tank car, to General American Tank Car Corp.
National Tube Co., three flat cars to Greenville Steel Car Co.
Old Hickory Chemical Co., one insulated tank car, to General American Tank Car Corp.
Pullman Co., 100 passenger cars, to Pullman Car & Mfg. Corp.
Southern Pacific, 10 baggage cars, to Pressed Steel Car Co.

CAR ORDERS PENDING

Chicago, Rock Island & Pacific, five baggage cars definitely pending and five horse-baggage cars under contemplation.
Green Bay & Western, 125 box cars.
Missouri-Kansas-Texas, 100 70-ton hopper cars.
North American Car Corp., 50 tank cars.
Reading Co., 25 coach car bodies; these are in addition to 70 miscellaneous coaches previously noted as pending.
Rio Grande do Sul, Brazil, 21 miscellaneous coaches; bids asked through Dr. Octacilio Pereira, Porto Alegre, Rio Grande do Sul, Brazil.
Texas & Pacific, 25 caboose underframes.
Youngstown Sheet & Tube Co., 12 flat cars; these are in addition to 80 gondola car bodies noted as pending in a recent issue.

LOCOMOTIVE ORDERS PENDING

Elgin, Joliet & Eastern, eight locomotives.
Erie, ten locomotives and five extra tenders.
Maine Central, one or two locomotives.
Toronto, Hamilton & Buffalo, two switch engines.
Union Pacific, 25 locomotives and 20 extra locomotive tenders.

Congress Officers Named

Announcement has been made of the recent appointment of C. R. Burt, Pratt & Whitney Co., Hartford, Conn., to the presidency of the Machine Tool congress, Cincinnati, until the next election. J. L. Cochran, National Cash Register Co., Dayton, O., has been selected vice president and Thomas R. Jones, Cincinnati Milling Machine Co., Cincinnati, treasurer. E. F. DuBrul, general manager, National Machine Tool Builders' association will continue as secretary of the congress. Directors incude Mr. Burt, Mr. Cochran, Mr. Jones, W. J. Peets, W. H. Miller, A. C. Danekind, W. G. Thompson, Guy Hubbard, A. L. Stewart, K. H. Condit, Tell Berna and Erik Oberg.

Deny Southern Merger

Birmingham, Ala., Feb. 25.—Newspaper reports here link the Republic Steel Corp., Sloss-Sheffield Steel & Iron Co., Gulf States Steel Co., Woodward Iron Co. and Central Foundry Co. in a merger. It is said that a conference of interested officials will be held in Florida shortly. Hugh Morrow, president of Sloss-Sheffield, and L. E. Geohegan, vice president of Gulf States, deny knowledge of such a merger. Other officials disclaim any knowledge of it.

Disclaims New Container

New York, Feb. 25.—American Can Co. is denying rumors that it intends to market a cellulose container, which apparently would be in competition with tin plate and other present container material.

Strip

Steady Rate of Buying Shows no Increase—Mills Appear Unable To Build Substantial Backlogs

CONSUMERS of steel strip have not increased requirements and producers are unable to build backlogs. The rate of buying is steady but relatively small, attributed to absence of demand from the automotive industry. Cold-rolled is less in demand than hot-rolled. Some inquiry for second quarter has followed suggestions that prices may be advanced for that delivery.

STRIP PRICES, PAGE 86

Pittsburgh, Feb. 25.—Strip steel requirements of leading consumers fail to show improvement over the past week. Incoming tonnage so far this month, however, is slightly ahead of the comparable January period. Shipments to automotive buyers have increased only slightly in February, leaving most improvement to be accounted for by miscellaneous consumers. Orders generally involve small lots and mills are unable to acquire backlogs except in the case of one or two producers who have deferred shipments on wide widths of hot strip. Activity in this material is better than in cold strip, production of which is off this week to a 35 to 40 per cent basis. Operations of hot strip mills are slightly more active at 60 to 65 per cent. Intimations of price advances in the second quarter are responsible for some inquiries for contracts during that period from buyers who are seeking protection at current prices. The market on hot material continues 1.80c and 1.90c for the two widths. Some irregularities are noted in cold strip, with large buyers occasionally able to do $2 a ton less than the general 2.65c, Pittsburgh, market.

Detroit, Feb. 25.—Specifications for strip, like those for other flat-rolled products, have developed a moderate decline. It may be late March before demand grows more vigorous. Hot-rolled strip is 1.70c to 1.80c, base, Pittsburgh, for wide, and 1.80c to 1.90c for narrow. Cold-rolled is 2.55c to 2.65c, base, Cleveland.

New York, Feb. 25.—Strip buying shows little change, with deliveries on hot strip about two weeks and on cold strip two to three weeks. Prices continue 1.80c to 1.90c, Pittsburgh, on hot strip, depending upon widths, and 2.65c, Pittsburgh, on cold-rolled strip.

Cleveland, Feb. 25.—Continued dullness characterizes hot and cold strip steel. Larger consumers have satisfied requirements for the current month and with deliveries easy, they do not have to anticipate March needs. No interest is manifest in second quarter. Cold strip is quoted 2.65c, Cleveland, and wide hot is held at 1.80c, Pittsburgh, with narrow bringing 1.90c.

Chicago, Feb. 25.—Cold-rolled strip backlogs are light, and automotive tonnage is showing no improvement. Cold-rolled operations are about 40 to 45 per cent, although some smaller producers are above 50 per cent. Hot-rolled strip operations are holding at about 65 per cent. The price for hot-rolled strip is 1.90c to 2.00c, Chicago, according to widths. Cold-rolled strip is unchanged at 2.65c, Pittsburgh-Cleveland base.

Cincinnati, Feb. 25.—A maker in this district has announced the following prices on strip for second quarter: Hot-rolled strip 1.80c, base, Pittsburgh, and cold-rolled strip 2.75c, base, Cleveland.

Youngstown, O., Feb. 25.—Hot-rolled strip demand continues at a high rate and mills in this district continue to operate at 90 per cent. The greatest demand from consumers appears to be for hot strip up to 6-inch, and from 16-inch upward, the middle sizes not being so active. Cold-rolled needs are not pressing upon the mills in such volume as is the hot strip. Quotations are steady on hot-rolled at 1.80c to 1.90c, Pittsburgh and Cleveland, depending upon widths. Cold rolled is 2.65c to 2.75c, same bases.

Seneca Buys Furnace

Seneca Iron & Steel Co., Buffalo, has placed an order with the Wean Engineering Co. Inc., Warren, O., for a sheet heat-treating furnace. The unit will be built along normalizing lines but provision will be made for definite heat-treating results.

Production and exports of hematite iron ore from the mines on Bell island, Newfoundland, amounted to 1,516,999 gross tons, valued at $2,503,048.35, in 1929, compared with 1,547,395 tons in 1928. Exports in 1929 included nearly 750,000 tons of ore sent to Germany, 700,000 tons to Sydney, Nova Scotia, and 76,000 tons to the United States.

Wire

Manufacturers' Wire Best Product in Present Market—General Demand Still Slow

WEATHER conditions have improved in some agricultural areas and an increase in demand for some lines of wire and its products has started. This is not sufficient to aid the market generally. Manufacturers continue the backbone of demand and except for this support output would be severely cut. Prices have shown some irregularity as a result of diminished requirements.

WIRE PRICES, PAGE 86

Chicago, Feb. 25.—Specifications for wire products are not improving materially. Manufacturers' wire is holding its own and better weather is expected to bring in heavier buying of common wire products by jobbers and dealers. It is reported that prices are not softening, but are holding on the basis of 2.45c, Chicago or western mills, for bright wire, and $2.35 to $2.45 for wire nails.

Worcester, Mass., Feb. 25.—Weather conditions far in advance of the season have given some impetus to production and demand for fence wire and building requirements, stepping production above the level expected. Prices are firm on plain bright wire to dealers at 2.55c to 2.65c, base, Worcester, to dealers.

New York, Feb. 25.—While nail buying this month has lagged behind that of the corresponding period last year, in the experience of one leading seller, manufacturers' wire has moved more briskly than a year ago. Bright plain wire is firm at 2.40c, Pittsburgh-Cleveland, and wire nails reasonably steady at $2.30, Pittsburgh-Cleveland, for jobber and general trade.

Buffalo, Feb. 25.—Operation of wire works shows a substantial gain over the January average. Demand for welded mesh is opening in a manner indicating a brisk spring trade.

Pittsburgh, Feb. 25.—Demand for manufacturers' wire is steady at the rate of preceding weeks but both these grades and merchant wire products are less active than a month ago. Irregularity continues in prices of merchant products with sales of wire nails noted at less than $2.30 in certain districts. Activity continues light, however, with jobbers out of the market. Bright plain wire is steady at 2.40c, with wire rods at $40.

Cleveland, Feb. 25.—No improvement is noticeable in nails, barbed wire or fence. Manufacturers' wire continues fair, specifications from nut, bolt, rivet, screw and other manufacturers, being fairly well maintained, although less than earlier in the month. Operations are 60 to 65 per cent.

De Groupet Iron Works, Detroit, has changed its capital from $150,000 to 15,000 shares no par value.

Nonferrous Metals

Good Shipments Continue Despite Light Demand—Tin Prices Reflect Downward Tendency—Other Quotations Fairly Firm

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 19	18.00	18.10	17.20	38.90	39.35	6.25	6.10	5.15	23.90	9.25	35.00
Feb. 20	18.00	18.10	17.20	39.00	39.40	6.25	6.10	5.15	23.90	9.12½	35.00
Feb. 21	18.00	18.10	17.20	38.75	39.25	6.25	6.10	5.15	23.90	9.12½	35.00
Feb. 24	18.00	18.10	17.20	38.37½	38.60	6.25	6.10	5.15	23.90	9.10	35.00
Feb. 25	18.00	18.10	17.20	38.12½	38.50	6.25	6.10	5.15	23.90	9.00	35.00

NEW YORK, Feb. 25.—New business in most nonferrous metals in the past week has been light but shipments continue of good size against orders placed earlier in the month. All prices are remarkably steady. Tin has shown a downward tendency but only in gradual steps. Zinc eased off a week or so ago but in the past few days has been relatively firm.

Buying of rolled brass products in the past week or two has been fairly active. Copper wire and cable sales, by far the most active of nonferrous business so far this year, have slackened in the past few days. Prices of brass and copper mill products are unchanged.

Copper—Domestic business continues to be done each day in a moderate way on the basis of 18.00c, Connecticut. Nearly all of this business is for prompt shipment, and a little for March. Export business, which had been running close to average, has been going at a slower rate in the past week. Consumers still are delaying their purchases as long as possible, but producers are content to wait for orders rather than push the market.

Zinc—New buying of prime western metal has been extremely light with prices almost entirely nominal. The market sagged recently on account of the lack of new buying. However current shipments of zinc are keeping pace with deliveries of other metals and are almost entirely against orders placed in January. Recent price weakness was accentuated because of a sudden break in London prices. The London market, however, has been well above American parity for some time due to tariff rates, so that there is little relation between the two. The Joplin ore market advanced $2 to $37 a ton a week ago and has held at this figure. This is far out of line with the slab zinc price, but the latter has not responded, due to the fact that stocks of metal are large. However, smelters are buying more ore than is currently being produced in the Joplin district.

Tin—Prices have been slipping off by fractions daily, due to light purchases by consumers. The buying is mostly for spot and nearby positions, though occasionally there are sales running well into the summer on deliveries. The latter are mostly to dealers. The consumption of tin apparently is increasing, but there is no sign that the automobile industry will use as much tin as consumed last year for some time to come.

Lead—Some buying is being done every day, though the market lately has not been quite so active as a short time ago. Producers are well sold and the market appears firm despite weakness in London.

Aluminum—Business is moderately active. Prices are firm and unchanged. —*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	10.00
Zinc sheet (100-pound base)	10.50
Zinc strip (100-pound base)	9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.25 to 11.75
Chicago	11.25 to 11.50
Cleveland	11.50 to 12.00
St. Louis	10.50 to 10.75
HEAVY YELLOW BRASS	
Cleveland	7.50 to 8.00
HEAVY COPPER AND WIRE	
New York	14.25 to 14.50
Boston	13.75 to 14.25
Chicago	13.75 to 14.00
Cleveland	13.50 to 14.00
St. Louis	10.50 to 11.00
RED BRASS BORINGS	
New York	10.25 to 10.75
YELLOW BRASS TUBING	
Cleveland	7.50 to 8.00
LIGHT COPPER	
New York	12.25 to 12.50
Chicago	12.25 to 12.50
Cleveland	12.00 to 12.50
St. Louis	10.50 to 11.00
LIGHT BRASS	
Boston	6.50 to 6.75
Chicago	6.25 to 6.75
Cleveland	6.00 to 6.50
St. Louis	6.00 to 6.50
ZINC	
New York	2.75 to 3.00
Cleveland	2.00 to 2.25
St. Louis	2.75
ALUMINUM	
Clippings, soft, Cleveland	14.50 to 15.00
Clippings, hard, Cleveland	11.50 to 12.00
Borings, Cleveland	7.50 to 8.00
Cast, Cleveland	10.50 to 11.00
Cast, Boston	10.50 to 11.00
Cast, St. Louis	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	16.25 to 16.75
Brass ingot, 85-5-5-5	15.50 to 15.75

Coke By-Products

Toluol Out of Slump—Sulphate Prices Reported Unsettled

New York, Feb. 25.—Coke by-products are steady and unchanged. Shipments against contracts are heavier, accounting for the bulk of material now moving. Spot business has declined in some quarters. Benzol is moving more briskly for motor fuels and toluol has recovered from the slump of several weeks ago. Some outside phenol is reported moving at 16.00c, but the market is generally held at 17.00c. Supplies are heavier as production holds fairly high against a slower demand. Naphthalene shipments are larger and spring movement in this material is expected to be in full swing within three weeks. Prices are firm. Sulphate of ammonia is going in fair volume in bulk to fertilizer interests, but prices are inclined to be unsettled.

Coke By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.35
Solvent naphtha	0.28
Commercial xylol	0.28
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Quicksilver Active, Firm

New York, Feb. 25.—Quicksilver is firm and active but unchanged at $123.50 to $124 a flask.

Warehouse

Conditions Spotty—Demand Lower Than 1929 Some Sections—Ahead of January Rate—Mill Deliveries Lengthening

CROSS currents are noted in the warehouse markets. Demand in New York is comparable to the January rate, but in Cincinnati it is higher. Ordering holds to the 1929 rate in Chicago, but at Pittsburgh is lower. Railroad material is active at St. Louis; sheets and concrete bars at Buffalo; and sheet orders at Cincinnati. Connecticut jobbers announced higher cold-finished bar and strip prices with adoption of new extras.

New York—Buying is at a rate comparable to that of January. Most jobbers look for a substantial improvement soon. Demand is spotty, with prices in the metropolitan district unchanged.

Connecticut jobbers recently revised their bases on cold-drawn bars and strip steel, now quoting the latter at 5.30c and the former at 3.65c for rounds and hexagons and 4.15c for flats and squares, for delivery within the state. They also have in effect extras on cold-drawn bars, similar to those announced in other districts.

Philadelphia—Tonnage sold so far this year is ahead of the 1929 rate.

Pittsburgh—Sales are slightly ahead of January, but below those of 1929. Nails and roofing material are slow. Prices are unchanged, although strength is lacking in some items.

Buffalo—Business continues to improve slowly. Mill competition for smaller lots is less keen. Sheets sell better and reinforcing bars have improved.

Detroit—Warehouse sales of iron and steel products are only moderate, being under the corresponding period of 1929. As automotive production ebbs slightly from early February, the call for material is less urgent.

Chicago—Sales are not holding to last year's volume, but improvement is expected in 30 to 60 days since mill deliveries are tighter. Prices remain unchanged. Galvanized sheet quotations may rise for next quarter.

Cincinnati—Business is maintained on a scale above last month. Demand for sheets is unusually steady.

St. Louis—Moderate increases in business are reported. More favorable weather brings increased orders for materials used outdoors. Railroad material is more active.

Cleveland—Demand is fair. Many small lots are placed. Aggregate bookings this month compare well with January's but are under those of February, 1929. Prices are unchanged.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.65c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.54½c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.90c
New York	3.65c to 3.90c
Philadelphia*†	3.80c
Pittsburgh**	3.65c to 3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.30c
Pittsburgh**	4.30c
Philadelphia*†	4.45c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats, squares
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.40c	3.90c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	4.75c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Seasonal Volume of Buying in Small Lots — Prices Hold at Steady Level

WEATHER conditions have become sufficiently better to improve demand for iron and steel products on the coast and considerable is in prospect for bids soon. Entry of two large eastern interests as active coast producers has tended to stabilize conditions. Pipe buying is the most active feature of the markets. Bridges and buildings take moderate tonnages.

San Francisco, Feb. 22.—(*By Air Mail*)—Since the United States Steel Corp. and the Bethlehem Steel Co. acquired full control of the Columbia Steel Corp. and the Pacific Coast Steel Co. respectively, a steadier tone is noted. Demand continues to show signs of improvement, though awards of large lots this week were not particularly numerous.

Pig Iron and Coke

Demand for foundry pig iron and foundry coke remains spotty, with most sales and inquiries confined to unimportant tonnages. No change has occurred recently in quotations.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

A fair tonnage of reinforcing bars is pending or up for figures, though most projects involve small lots. No change is noted in the price of out-of-stock material. Some improvement is noted in demand for merchant bar steel. Prices continue firm at 2.35c, c.i.f.

The only plate award of importance called for 1000 tons for freight car work for the Chicago, Milwaukee, St. Paul & Pacific railroad, placed with the leading interest and the Pacific Coast Steel Co. The Standard Oil Co., San Francisco, is expected to place 630 tons within the next few days. Little improvement is noted in the price and 2.25c, c.i.f., appears nominal, with important tonnages $2 to $3 a ton lower.

Demand for structural shapes continues to improve and numerous small lettings have been booked. Important lettings included 200 tons for an office building in Salinas, Calif., placed with the Judson-Pacific Co. McClintic-Marshall Co. took 140 tons for two factories in Los Angeles. Plain material continues unchanged and firm at 2.35c, c.i.f., coast ports.

Other Finished Material

Bookings of cast iron pipe this week showed a decided improvement over the tonnage placed during the previous week. The United States Pipe & Foundry Co. took 190 tons for Alhambra, Calif. Pending business, for 11 projects, aggregates close to 3200 tons. Glendale, Calif., has opened bids on 1545 tons. Movement of standard steel pipe is by no means heavy. At the moment no line pipe inquiries are in the market.

Normal Trade at Seattle

Seattle, Feb. 19.—The iron and steel trade of the Pacific Northwest is normal for the season. Fabricating shops are busy, with little important work in prospect. Operations at local mills have been reduced somewhat. The jobbing business is improving. Foundry activity is limited.

Several large projects involving steel are to be up for figures soon but others have been temporarily delayed. Weather conditions have improved and outdoor construction is getting under way.

Bars, Plates and Shapes

Mill prices on plates, shapes and bars remain unchanged, merchant bars and shapes at 2.35c, reinforcing bars 2.30c and plates 2.25c.

Local steel mills show reduced operations compared with late 1929. Reinforcing contracts let this week exceed 1100 tons. Reinforcing for the Washington Athletic club, Seattle, 600 tons, has been divided between the Northwest Steel Rolling Mills and Pacific Coast Steel Co. The former company has been awarded 300 tons for piers of the Fourteenth Avenue south bridge, Seattle. An unstated interest obtained 225 tons for a bridge over the Rogue river, Oreg. Award of 840 tons for the Gold Beach, Oreg., bridge, reported in the issue of Feb. 13 awarded to an unstated interest, is said to have been booked by the United States Steel Products Co. Not much tonnage is pending, the largest being 1000 tons for the Tacoma Medical and Dental building.

No large projects involving plates are up for figures. Jobbing houses report a fair turnover in light gages for tank and boiler jobs while local shops have considerable work under way.

Bids will be opened March 12 by the navy department for a machine shop and other buildings for the Sand Point, Seattle, airport. This work includes about 400 tons of shapes. The only awards of the week were 100 tons for an addition to the Fisher Flouring Mills plant, Seattle, to Wallace Bridge & Structural Steel Co., while Hofius Steel & Equipment Co. will furnish about 35 tons for alterations to the First National Bank building, Seattle. Canadian Pacific railroad plans construction of five steel spans on the main line of its western division this summer.

Finished Materials

While the wholesale jobbing business is quiet and uneven, some improvement is noted with better weather. Increased orders are coming from the country districts. Warehouse trade predominates although there is more activity in mill buying. Jobbing price schedules are unchanged, houses in this district generally maintaining prices although cutting is still prevalent at Portland and San Francisco.

Pipe Inquiry Is Active

Inquiry for cast iron pipe continues active and several important contracts are about to be released. Bremerton, Wash., is calling for bids for furnishing about 120 tons. Port Townsend, Wash., has awarded the general contract for extensions to its water system.

Old Material Easier

Steel scrap is somewhat easier. Although mills are still paying $10 to $11, gross, buyers are more particular in making selections. Receipts are equal to consumption and are expected to increase shortly with the advent of the spring cleanup. Cast iron scrap is slow, as foundries are buying only in small lots. Average price continues unchanged at $13, net ton.

Auto Production Rises

Washington, Feb. 25.—Production of automobiles rose in January, when 273,089 units were turned out. However, figures on production were far below January, 1929, as reported by the department of commerce from 144 manufacturers. Canadian comparisons are from the dominion bureau of statistics, and both reveal a rise in passenger and truck units, production for the past month. Figures follow, some revisions being noted:

	United States			Canada
1929	Total	Passenger cars	Trucks	Total
Jan.	401,037	347,382	51,591	21,501
Feb.	466,418	405,708	58,602	31,287
March	585,457	513,344	70,034	40,621
April	621,910	537,225	82,999	41,901
May	604,691	516,055	87,318	31,559
June	545,932	452,598	91,956	21,492
July*	500,840	426,137	73,649	17,461
Aug.	498,628	441,942	55,646	14,214
Sept.	415,912	364,786	50,261	13,817
Oct.	380,017	320,327	58,822	14,523
Nov.	217,570	169,282	46,642	9,424
Dec.*	120,004	91,235	27,286	5,495
Total* (year)	5,358,414	4,586,021	754,804	263,295
1930				
Jan.	273,089	234,527	37,990	10,388

*Revised.

In 1816, wire fences were in limited use in the neighborhood of Philadelphia, the wire for which was made by White & Hazard at Schuylkill Falls.

Weirton Closes Contract for Rail Mill

Pittsburgh, Feb. 25.—Weirton Steel Co., unit of the National Steel Corp., has closed a contract with the United Engineering & Foundry Co. for a rail and structural mill to cost about $3,500,000. The mill will be built at Weirton, W. Va., and is expected to be completed and ready for operation in the last quarter of this year.

City Wins Safety Contest

Worcester, Mass., Feb. 25.—The safety record of Worcester, Mass., for 1929 was the best of 13 cities engaged in interplant safety contests. With 58,400,475 man-hours worked in Worcester, 14,183 working days were lost because of 593 industrial accidents. These figures give Worcester a security rate of 0.41 based on the number of days lost per 10,000 hours worked, according to the National Safety council system of computing averages. Baltimore is reported to have had the highest severity rate, 2.04.

Describes Institute Work

A. J. Tuscany, manager, Gray Iron institute, Cleveland, outlined various phases of the institute's work to representatives of gray iron foundries in the Newark, N. J., district, Feb. 25. He described the institute's standard costs system recently published; its plan for developing recommended practices; its uniform trade customs and its program for promoting the use of gray iron. The meeting was in charge of John L. Carter, president of the Newark Foundrymen's association.

Interlake Iron Elects

New York, Feb. 25.—Directors of the Interlake Iron Corp., formed by a merger of lake merchant blast furnaces, met here today. Seymour Wheeler, of Pickands, Brown & Co., Chicago, was elected a director, succeeding the late E. L. Whittemore. An initial dividend on the common stock of 25 cents a share was declared, payable March 25 to holders of March 10.

Boiler Orders Fall

Washington, Feb. 25.—New orders for 942 steel boilers were placed in January, totaling 1,081,764 square feet, according to department of commerce figures. This compares with 1029 boilers having 880,172 square feet, which was the production in December, 1929. Revision of the 1929 total shows an area of 19,468,534 square feet for 18,526 boilers.

Institute Members Join 50-Year Legion

George E. Thackray, special engineer, Bethlehem Steel Co., Bethlehem, Pa., and one of the speakers at the annual dinner of the American Institute of Mining and Metallurgical Engineers last week in New York, was the sole representative of the class of 1880 to attend the meeting. Each year a new class joins the Legion of Honor with 50 years of membership in the institute. Those attaining that distinction this year were: A. W. Crookston, mining engineer, London, England; W. B. Devereaux, consulting mining engineer, New York; B. F. Fackenthal Jr., Riegelsville, Pa.; Frank Klepetko, mining and metallurgical engineer, Lima, Peru; Wheaton B. Kunhardt, chairman of board, Carpenter Steel Co., New York; William L. Neill, Syracuse, N. Y.; Francis Nicholson, consulting engineer, Lloyds Bank Ltd., London, England; William N. Page, civil and mining engineer, Washington; Arthur W. Sheafer, mining engineer, Pottsville, Pa.; and George C. Stone, chief metallurgist, New Jersey Zinc Co., New York.

Cold Finished Steel

Business Steady But at Moderate Rate With Price Firm

COLD FINISHED PRICES, PAGE 86

Pittsburgh, Feb. 25.—Cold-finished steel bar shipments and specifications are steady but incoming business shows little increase over January. Shipments are slightly heavier than a month ago. Specifications still are confined to small lots with automotive buyers showing little tendency to anticipate future requirements. Consumption of the farm implement group is holding well and business from miscellaneous consumers is slightly more active than from the automotive interests. The market is reported firmly held at 2.10c, Pittsburgh.

Cleveland, Feb. 25.—Cold-finished bar orders are spasmodic. This appears to be the off week, most consumers in automotive as well as other lines having supplied their requirements for the current month. No inquiries have appeared for second quarter. The 2.10c, Cleveland, price apparently is firm.

Detroit, Feb. 25.—Specifications show a moderate increase over a month ago but are not equal to early February. Since current auto production, slightly lower than at the beginning of February, is expected to continue largely unchanged through March, it is expected that cold finished bar specifications will show no great bulge until next month. Belief is widespread that automobile production will begin a marked upturn late in March or early in April. Cold finished bars are usually 2.10c, Cleveland.

Pig Iron

(*Concluded from Page* 87)

yards to meet shipping instructions. Orders include 700 tons for a foundry north of here. The inquiry for 1500 tons for a Wisconsin implement maker still is pending. Northern iron is sell- at $20, base, Chicago. Southern is offered at $13 to $14, base, Birmingham.

Philadelphia, Feb. 25.—Demand for foundry iron has improved but is restricted mainly to 500-ton lots and less. Baldwin Locomotive Works is inquiring for 1500 to 2000 tons of high silicon foundry iron. General Steel Castings Corp. bought 1000 tons of low phosphorus iron. Pusey & Jones Co. is inquiring for 400 tons of foundry iron. Prices are steady.

Youngstown, O., Feb. 25.—New sales of No. 2 foundry and malleable pig iron continue slow and of small tonnage. Buyers are taking shipments fairly satisfactorily. No. 2 foundry and basic hold at $18.50, valley, and besemer and malleable at $19.

Cincinnati, Feb. 25.—For the third consecutive week total sales of pig iron in this district passed 8000 tons. Southern iron is being offered at $13, base, Birmingham. A higher price is asked south of the Ohio river. Sales included a 2000-ton lot and a 1500-ton lot of northern foundry iron for Ohio melters. The Marmon Motor Car Co., Indianapolis, is in the market for 1200 to 1500 tons of malleable, and an Ohio melter is inquiring for 7500 tons of malleable for second quarter requirements.

St. Louis, Feb. 25.—Buying of pig iron has dropped off, users having covered for first quarter. The daily average of shipments so far this month is larger than that for all of January, though below that of a year ago. Some inquiries have developed for second quarter. Blast furnace interests have not definitely announced prices for that period. Sales reported in the past week aggregated 6000 tons, of which approximately 4000 tons was northern iron.

Birmingham, Ala., Feb. 25.—Pig iron purchasing continues in small lots, with early delivery stipulated. A considerable tonnage is to be moved to eastern districts during next 90 days. Consumers in this territory report they will need much iron through the second quarter, though little has been ordered. The price for local delivery is firm at $15, base.

Toronto, Ont., Feb. 25.—Pig iron demand is entirely for spot delivery, but tonnages are larger. The recent price reduction has shut out some United States competitors, other than those supplying duty-free iron to agricultural implement makers.

January Exports Up as Imports Decline

Washington, Feb. 25.—Preliminary figures released by the department of commerce for January foreign trade of the United States in iron and steel products indicate an export trade of 225,090 gross tons, exceeding that of December, 1929, by 9848 tons. Imports, on the other hand, declined 5172 tons to a total of 42,314 tons. In point of tonnage the principal products in the export trade were scrap with 61,865 tons, tin plate with 25,026 tons, plain shapes totaling 14,109 tons, black sheets at 12,959 tons, and galvanized sheets amounting to 10,449 tons.

The month's best markets were headed by Canada with 73,340 tons, Japan taking 39,010, and Spain 10,313 tons. Receipts of 9080 tons of pig iron and 9850 tons of structural shapes were outstanding. The principal suppliers of our import trade were: Belgium with 9996 tons, Germany supplying 7545 tons, and Canada sending 6837 tons.

Awards Bessemer Medals

The British Iron and Steel institute has awarded the Bessemer gold medals to Eugene Schneider, chairman, Schneider & Co., Creuzot, France, and Dr. Walter Rosenhain, superintendent, metallurgical research department, National Physical laboratary, Teddington, England, and president, Institute of Metals. The medal recognizes distinguished service in advancing the science of engineering as applied to the manufacture of iron and steel. Mr. Schneider, past president of the British Iron and Steel institute, was in charge of the French trade commission which met representatives of the American iron and steel industries in Atlantic City, N. J., in 1919. An honorary degree of doctor of science was conferred upon him by the University of Pittsburgh in 1919. The medals will be presented May 1 at the annual meeting of the institute.

Coke Production Slumps

Output of by-product coke in January was 4,203,323 net tons, compared with 4,180,601 in December and 4,360,194 in January, 1929. Output of beehive coke in January was 309,200 net tons, against 344,900 tons in December and 479,100 tons last January. The month's total, according to the federal bureau of mines, thus was 4,512,523 tons, compared with 4,525,501 tons in December and 4,839,294 tons production in January, 1929.

Daily average production for both grades was 147,043 tons in January, compared with 148,654 in December and 158,395 last January.

River Traffic Declines

Pittsburgh, Feb. 25.—Traffic in iron and steel products over rivers in this district declined during January, according to the United States engineers' office here. Movement over the Ohio was heavier than a year ago, but the combined tonnage for all three rivers declined from the figures for December and for January, 1929. Comparative monthly figures follow:

1930	Allegheny	Monongahela	Ohio
January	100	58,784	64,736
1929			
January	.....	80,402	48,471
February	.....	83,358	72,203
March	25	93,627	92,040
April	210	99,067	105,472
May	525	88,340	102,162
June	722	116,157	116,679
July	25	109,051	102,963
August	100	134,426	137,734
September	.....	135,773	150,163
October	.....	119,380	119,129
November	500	83,189	88,011
December	400	60,957	77,885
Total	2,507	1,203,827	1,212,912

Truck Sales Are Off

Washington, Feb. 25.—January shipments of electrical industrial trucks and tractors were 139, as reported by ten leading manufacturers to the department of commerce. This compares with 151 in December, 1929, and 152 in January of the same year. Following are monthly figures:

		Shipments	
1929	Total	Domestic	Export
January	152	133	19
February	134	131	3
March	211	201	10
April	194	181	13
May	211	202	9
June	201	185	16
July	168	163	5
August	154	144	10
September	158	151	7
October	167	134	33
November	118	110	8
December	151	124	27
Total (year)	2,019	1,859	160
1930			
January	139	123	16

Rustless Iron Elects

Pittsburgh, Feb. 25.—Charles L. Payson, New York, also a director in the Superior Steel Corp., has been elected chairman of the board of the International Rustless Iron Corp. A. H. Wild continues as president and C. E. Tuttle, New York, was elected to Mr. Wild's former position as president of the Rustless Iron Corp. of America, a subsidiary of the International Rustless Iron Corp.

Steam power was first applied to printing in the *Times* office, New York, in 1814.

Pittsburgh To Be Host To Safety Congress

The nineteenth annual safety congress sponsored by the National Safety council will be held Sept. 29-Oct. 4 at the William Penn and Fort Pitt hotels, Pittsburgh. An unusually large safety exhibit is being planned and will be displayed in the two basements of the William Penn. Last year approximately 125 manufacturers of safety equipment arranged exhibits for the delegates, in addition to an extensive safety display by the United States naval departments from Washington, and officials are attempting to make this year's exhibits even larger.

One day of the congress is set aside as Pennsylvania day in line with the policy of the council. At the congress held last year at Chicago, over 7000 delegates attended from all over the world.

Foundry Output Drops

Worcester, Mass., Feb. 25.—Worcester Foundry council, comprised of 11 foundries, produced 2,819,796 pounds of castings in December, 1929, according to compilations recently announced. This is a low mark for the year, and is a perceptible falling off from the preceding month, as well as a severe drop from December, 1928. The total for 1929 was higher than for 1928.

1928	Pounds
December	4,175,119
Total, 1928	42,276,248
1929	
January	3,841,380
February	4,356,460
March	5,029,613
April	4,916,263
May	5,231,926
June	4,199,102
July	4,192,693
August	4,869,912
September	3,946,064
October	4,456,646
November	4,108,685
December	2,819,796
Total, 1929	51,968,540

Slow Business Till May

New York, Feb. 25.—The National Industrial Conference board says it will be May or June before approximately normal levels of business activity are reached. This statement is based on the consensus of opinion of industrial statisticians reporting to the board. General business in January was found to have improved somewhat over December, but was the lowest for any January since 1922.

Bethlehem Steel Co. plans to raze brick dormitory houses at its Lackawanna plant, near Buffalo, and construct a village of modern, single-family houses.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

EATON AXLE & SPRING CO., Cleveland, and Wilcox-Rich Corp., Detroit, have approved a merger plan and will proceed immediately to effect a consolidation. The Eaton company also has acquired the Peterson Spring Co., Detroit, and will move production to its own Detroit plant. Eaton spring manufacture previously has been confined to leaf springs. The new department will add springs for valves, brakes and locks. Wilcox-Rich Corp. has four plants, at Detroit, Saginaw, Battle Creek and Marshall, Mich. It manufactures tappets, valves, piston rings and other parts for automobiles, trucks and airplanes. Wilcox-Rich Corp. was formed in January, 1929, by consolidation of the Rich Tool Co. and a predecessor of the same name. The latter had been formed of the Rich Products Co. and the Wilcox Products Co., merged in September, 1928.

* * *

AMERICAN CHAIN CO., Bridgeport, Conn., has taken over the Hazard Wire Rope Co., Wilkesbarre, Pa.

* * *

DODGE MFG. CO. LTD., Toronto, Ont., has been made distributor in Canada for the Chain Belt Co., Milwaukee, and the Stearns Conveyor Co., Cleveland.

* * *

WILLIAM PRYM OF AMERICA INC., New York, dealer in iron and steel products, has moved main office and stockrooms to the Hoover building, 505 Eighth avenue.

* * *

A. G. REEVES STEEL CONSTRUCTION CO., Alliance, O., is the new name taken by the former Reeves Bros. Co. No change has been made in corporate structure or organization.

* * *

CHICAGO PNEUMATIC TOOL CO., 6 East Forty-fourth street, New York, has opened a branch office at 327 Philcade building, Tulsa, Okla., in charge of George J. Lynch, district manager. This office will handle sales and servicing of compressors, engines, tools, pumps, condencers and rock drills. The office recently opened at 1 Sixteenth street, Oklahoma City, Okla., for handling exclusively one type of rock bit, will continue in that capacity.

* * *

FERRO ENAMEL SUPPLY CO., Cleveland, has received an order from the Wrought Iron Range Co., St. Louis, for an oil-fired continuous porcelain enameling furnace for immediate installation.

* * *

STEEL BLANKING CO., Sandusky, O., manufacturer of sheet metal products and stampings, has been formed by merger of the R. W. Cornwall Mfg. Co. and the Steel Blanking Co. The merger has increased facilities for production and service.

* * *

GOHMANN BROS. & KAHLER CO., New Albany, Ind., has reorganized as the Gohmann-Kahler Corp. Its product will be stoves, ranges and cooking devices. Directors are Charles H. Gohmann, Joseph Kahler and John F. Buche. Its capital consists of 7250 shares no par value.

* * *

DETROIT FORGING CO., Detroit, has elected E. R. Wegener president, J. Farrand Williams vice president, Arthur L. Rose vice president in charge of sales, and N. H. Macqueen secretary and treasurer. Net profit for 1929 was equal to $1.95 per share, compared with $1.65 per share in 1928.

* * *

LACLEDE-CHRISTY CLAY PRODUCTS CO., St. Louis, John L. Green, president, will build an additional kiln at plant No. 3, to increase capacity from 10,000,000 to 20,000,000 bricks per year. At plant No. 1 two tunnel kilns and a carpenter shop will be erected, increasing capacity 60 per cent.

* * *

COLEBROOKDALE IRON CO., Colebrookdale, Pa., with offices at Pottstown, Pa., has reorganized through purchase of a majority of stock from former holders. William B. Keeley has been elected president and Murray A. Crull secretary and treasurer. Directors include Edwin M. Rhoads, president, Eastern Foundry Co. and Peerless Heater Co., Boyertown, Pa.; Daniel J. Burkert, vice president, Eastern Foundry Co.; William B. Keeley and Murray A. Crull. Melvin Schaeffer will continue in charge of production and purchasing departments.

* * *

NEW IDEA SPREADER CO., Coldwater, O., manufacturer of farm machinery, has bought the Sandwich Mfg. Co., Sandwich, Ill., also manufacturer of farm equipment. Products of the latter will continue to be manufactured at Sandwich but will be known as Sandwich-New Idea machines and will be sold by New Idea dealers.

* * *

R. MUNROE & SONS MFG. CORP., Pittsburgh, has built for the Duquesne Light Co., Brunots island, Pittsburgh, a boiler stack 28 feet in diameter and 165 feet high. It is self-supporting and anchored to the roof of the building. The same company also furnished smoke breechings connecting the boilers to the base of the stack. It is designed to care for about 15,000 horsepower capacity.

* * *

GEOMETRIC TOOL CO., New Haven, Conn., will open its own office in Detroit to give complete service to users of its equipment in Detroit and vicinity. It has taken quarters at 315B, Stormfeltz-Liveley building, Woodward avenue and Grand boulevard. A stock of standard tools and chasers will be carried. Orders will be filled from stock at Detroit or from the factory at New Haven but billing will be from the New Haven offices and payments will be made direct there. Charles A. Strelinger Co., Detroit, will continue to sell the Geometric company's threading machines and chaser grinders.

* * *

CROMPTON & NOWLES LOOM WORKS, Worcester, Mass., has re-elected officers, as follows: President, Dr. Homer Gage; Vice president and general manager, John F. Tinsley; vice presidents, Frederic W. Howe, Providence, and Irving H. Verry; treasurer, Eward F. Green; assistant treasurer, Fred J. Bowen; clerk, John B. Syme; attorney, Charles M. Thayer. Directors are: Sydenham B. Alexander, Charlotte, N. C.; Fred J. Bowen, George Crompton, Mr. Frost,

Dr. Gage, T. Hovey Gage, Albert A. Gordon, Mr. Green, Mr. Howe, Frank P. Knowles, Henry F. Phelps, Philadelphia; Pierpont L. Stackpole, Boston; Mr. Syme, Mr. Thayer, Mr. Tinsley, Mr. Verry and George E. Warren, Boston. The executive committee is: Mr. Frost, Dr. Gage, Mr. Green, Mr. Howe, Mr. Knowles, Mr. Stackpole, Mr. Tinsley, Mr. Verry and Mr. Warren.

* * *

ELECTRIC MACHINERY MFG. CO., Minneapolis, has moved its Detroit office to 10-230 General Motors building.

* * *

METAL HOSE & TUBING CO., St. Louis, has leased warehouse and office space at 3916 Geraldine avenue and will move there from 1611 Pine street. Francis King is manager.

* * *

PAXON-TAGGART INC., 112 Point street, Philadelphia, has moved its New England offices and warehouse to the Barstow building, Providence, R. I.

* * *

AMERICAN LOCOMOTIVE CO. has ceased construction of locomotives at its Brooks plant, Dunkirk, N. Y. The plant will be devoted entirely to production of pipe, tanks, pumps and oil refining machinery.

* * *

BIG THREE WELDING & EQUIPMENT CO., Tulsa, Okla., has moved its offices and warehouse from Second and Elwood streets to Tulsa Terminal building, 8 North Cheyenne street.

* * *

THOMAS SPACING MACHINE CO., builder of fabricating machinery, whose main office and plant is at Pittsburgh, has moved its Chicago sales office, in charge of E. C. Thomas, from the Midland building to 208 South LaSalle street, room 927.

* * *

WATLING MFG. CO., 701 West boulevard, Chicago, manufacturer of springless scales, has purchased from the Houdaille-Hershey Corp. a factory building at 4640-60 West Fulton street. The plant consists of a 1 and 2-story mill construction building, 195 x 130 feet, with floor space of about 17,000 square feet.

* * *

LUDLUM STEEL CO., Watervliet, N. Y., reports consolidated net income for 1929 of $919,513, after all charges, which represents an increase of 57 per cent in earnings compared with those for 1928. Income for 1929 was equivalent to $3.68 a share on 170,000 shares of common stock outstanding. Excluding earnings of the Atlas Steel Corp., net income of the Ludlum Steel Co. for 1928 was $586,610, equivalent to $4.34 a share on 135,000 shares of capital stock outstanding.

* * *

VALLEY ELECTRIC CORP., St. Louis, is the new name adopted by the former Valley Electric Co. Leonard Jaeger is president.

* * *

BUCYRUS-ERIE CO., South Milwaukee, Wis., has been given an order by the Monks-Ulen organization, which is conducting reclamation work for the government of Greece, for five dragline excavating units costing approximately $610,000. The machines will be mounted on crawler type tractors and are to be delivered for use on the Struma river project.

* * *

OILGEAR CO., Milwaukee, manufacturer of broaching machines, hydraulic feeds for machine tools and other equipment plans erection of an addition to its plant at 655 Park street. At present about $50,000 worth of new machinery is being added. The original factory has been enlarged three times. Production in 1929 was 40 per cent above 1928.

* * *

FEDERAL PRESSED STEEL CO., Milwaukee, has booked an order from the International Harvester Co. for its entire requirements of heavy pressed steel bumpers for trucks of 1930 production. The order calls for 100,000 to 150,000 units. Production will be started early in March and by the end of April an output of 300 units per day is expected to be reached.

* * *

SULLIVAN MACHINERY CO., Chicago, in its report for the year ended Dec. 31, 1929, shows net income of $1,164,563, equivalent to $6.28 a share, compared with $916,762, or $4.70 a share for 1928. Surplus at the end of 1929 amounted to $5,175,232, after transferring $200,000 to the contingency reserve account. Surplus at the close of the previous year was $4,952,216.

* * *

NORTHERN CONVEYOR & MFG. CO., Janesville, Wis., has increased its capital from $100,000 to $500,000, it is announced by George R. Whitnall, secretary and treasurer. A 100 per cent stock dividend on all outstanding common stock as of Jan. 1 has been voted, and in addition to approving the erection of a plant extension now under way, authority was given for the purchase of a large quantity of new machinery. The building is 160 x 200 feet. Officers were re-elected as follows: President, H. E. Whitnall; vice president, L. T. Whitnall; secretary and treasurer, George R. Whitnall.

* * *

WHEELER METAL PRODUCTS CORP., Cleveland, manufacturer of automobile parts, is booking more business than one year ago, according to C. J. Edwards, sales manager, whose office is in Detroit. Larger business has come through increased facilities. A $200,000 plant addition, quadrupling capacity, has just been completed at 1637-39 Collamer avenue, Cleveland. The Wheeler corporation now has a completely equipped windshield department and a rolling department to make various rolled shapes. Press equipment also has been increased. Assisting Mr. Edwards in the sales department, 607 Fisher building, Detroit, are R. A. Cragin and M. T. Johnson.

* * *

DOMINION ENGINEERING WORKS LTD., Lachine, Que., has established a department for manufacture of mining machinery. The company has acquired the ex-Canadian rights for the Williamson ball mill, two of which have already been built by the local concern. In addition the company will undertake the manufacture of crushers, ore cars, thickeners, filters and special machinery. Previously the company has specialized in hydraulic and pulp and paper machinery. The company has received an order for four 50,000-horsepower and two 8000-horsepower waterwheels, with embedded parts for six additional wheels to be used in connection with the canal and power plant to cost $65,000,000 at Beauharnois for the Beauharnois Power Co.

Mirrors of Motordom

(*Continued from Page* 77)

wringer, recovering thereby 20,000 to 30,000 gallons of oil. Cast iron and malleable borings, running about 50 cars a month, fall directly into containers which overhead cranes dump directly into open-top cars.

Of hydraulic bundles Hudson-Essex normally produces 100 cars a month. All discarded drills, reamers and similar tools are sparked to detect high-speed steel. Being the largest user of aluminum castings in the automotive industry, Hudson-Essex pays especial attention to its aluminum waste. In the nonferrous scrap shed all material is passed

through an electric separator to eliminate ferrous material.

* * *

HOW many automobiles were bought "on time" last year? Including used cars, 3,441,629 involving financing totaling $1,586,918,550, according to the department of commerce. New passenger cars whose purchase was expedited by finance companies numbered 1,815,673, or 37 per cent of the total production. On these new cars the financing averaged $596. A striking commentary on the enfeebled purses of new car buyers in the last half of 1929 is that such financing increased 42 per cent over the last half of 1928 at a time when actual automobile production was declining 2 per cent.

* * *

ANY effect of the $15,000,000 junking program of the national automobile chamber of commerce upon steel consumption by the automotive industry will be indirect. This sum, under direction of a committee headed by R. H. Grant, vice president of the General Motors Corp., will be expended in removing permanently "those cars which menace the safety of other highway users."

Allowances will be made to dealers to junk cars traded-in, and sums also will be expended to enable junk dealers to scrap cars whose apparent salvage is below their cost. While ownership of so-called wrecks usually denotes inability to purchase better cars, nevertheless it is felt that with $25 to $50 bargain cars off the market the purchase of other cars will be expedited.

There being little steelmaking capacity in this district, compared with Pittsburgh and Youngstown, O., the increased volume of available scrap would affect the primary steel market here inconsequentially.

* * *

RANKED by the number of cars sold, the first 20 motor car manufacturers in 1929 were: Ford, Chevrolet, Essex, Chrysler-Plymouth, Whippet, Pontiac, Buick, Dodge, Nash, Olds, Studebaker, Hudson, Graham-Paige, DeSoto, Durant, Packard, Hupp, Willys-Knight, Oakland and LaSalle.

Will Meet in Pittsburgh

The midwinter meeting of the Eastern States Blast Furnace and Coke Oven association will be held at the William Penn hotel, Pittsburgh, Feb. 28. Round table discussions of blast furnace problems under the chairmanship of A. W. Gittins and of coke oven problems under the chairmanship of B. M. Stubblefield are scheduled for 10 a.m. Following a buffet luncheon at noon members of both groups will hold a joint session to discuss the effect upon cost of pig iron of each 1 per cent ash in coke, sizing of coke for blast furnace and domestic uses, relative merits of 14-inch and wider ovens and relationship between raw materials being used and operating results obtained from blast furnaces 24 feet or more in hearth diameter. Robert McEldowney will preside at the afternoon meeting. A dinner will be served at 6:30 p.m.

Spends Money in South

Birmingham, Ala., Feb. 25.—The Gulf States Steel Co., which is engaged in a large expansion project at its mills at Gadsden, Ala., is maintaining a policy of purchasing all material and doing all work possible in the Birmingham district. Local machine shops and foundries thus are busier than they would be otherwise.

Fox invented a planing machine in 1814.

Obituaries

JACOB D. COX, 77, founder of the Cleveland Twist Drill Co., Cleveland, who retired in 1918, leaving the direction of the company to his sons, Samuel H. and Jacob D. Cox Jr., died Feb. 23, in Pasadena, Calif. He had been in failing health for two years. He was born at Warren, O., May 15, 1852, where he was educated in the grade schools. He located in Cleveland in 1868 and entered the employ of the Cleveland Iron Co. as rod turner, and later was puddler and roller until the fall of 1875. In June, 1876, he formed a partnership with C. C. Newton, of Dunkirk, N. Y., for the manufacture of twist drills, then a new product. The first factory was located in Dunkirk, but in September, 1876, it was removed to Cleveland under the firm name of Newton & Cox. In 1880 Mr. Cox purchased Mr. Newton's interest and continued the business under his own name until the fall, when F. F. Prentiss became interested and the name was changed to Cox & Prentiss. On Jan. 1, 1904, the company was incorporated under Ohio laws as the Cleveland Twist Drill Co. Mr. Cox remained as chairman of the board after his retirement from other business connections. He also continued to be a director of the Cleveland Trust Co. He was a member of many societies, including the American Society of Mechanical Engineers, the Franklin institute, the Society of Mayflower Descendants and the Loyal Legion. He was a member of Union and Mayfield clubs, Cleveland, Essex County Club of Massachusetts, and the Midwick club, Los Angeles.

* * *

William H. Nichols, 77, director and formerly president of the Nichols Copper Co., died Feb. 21 of heart disease in Honolulu, Hawaii. He was the founder of the company and its president from 1890 until 1918. He also was chairman of the Allied Chemical & Dye Corp. and founder of the General Chemical Co.

* * *

Kent H. Blacklidge, 43, an official of the Globe Stove & Range Co., Kokomo, Ind., was killed recently in an automobile accident.

* * *

William E. Lyle, vice president at Buffalo of the Turner Construction Co., New York, died recently in that city.

* * *

Arthur J. Hayes, 60, former resident manager of the United States Pipe & Foundry Co., Burlington, N. J., died last week in his home in Buffalo, where he had lived since ill health forced his retirement six years ago.

* * *

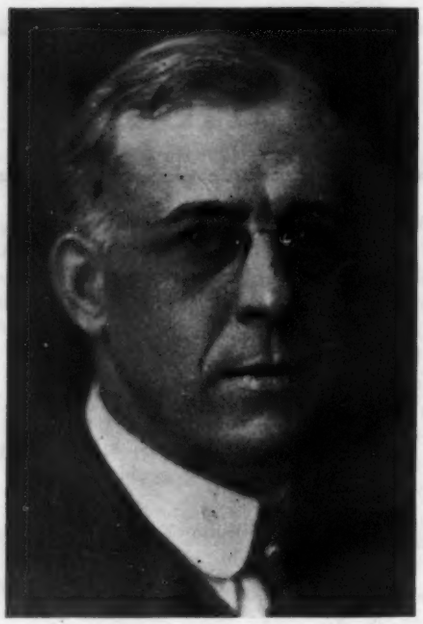
Cecil R. Pilsbury, 53, assistant treasurer of the General Steel Castings Corp., Granite City, Ill., died in Philadelphia, Feb. 20, following an appendicitis operation. Mr. Pilsbury, started work for the Commonwealth Steel Co. 16 years ago as a checker at $2 a day, advancing to the office of treasurer, which he held until the Commonwealth company merged with General Steel Castings Corp. last July.

* * *

Edward C. Fisher, 55, St. Louis district sales manager of the American Locomotive Co., died at his home there last week, following a long illness. Born in Powhatan county, Va., he became affiliated with the American Locomotive Co. at the time of its incorporation in 1901, having previously been connected with the Richmond Locomotive Works. He had been manager of the St. Louis territory, which comprises eight states, since 1922.

Industrial Men in the Day's News

Clyde G. Conley, President, Mt. Vernon Bridge Co., Mt. Vernon, O.



ALL 28 years of his industrial career have been spent with the company of which he now is head.

HE HAS seen it grow until it has an annual fabricating capacity of 25,000 tons of structural steel and has contributed much effort to that expansion.

STARTING as a draftsman, he has risen to the chief executive's chair by successive promotions as chief draftsman, contracting engineer, secretary and vice president.

HIS entire business career with one company, Clyde G. Conley, new president of the Mt. Vernon Bridge Co., Mt. Vernon, O., is now rewarded in a tangible way for his ability during a 28-year period to see nothing else but the Mt. Vernon Bridge Co. His has been never-flagging interest in its welfare and he has watched its expansion carefully, lest the business to which he thought it was entitled should go elsewhere. He has with abounding energy contributed much to that growth and has seen his company attain a place of no mean proportions in the structural fabricating field.

The Mt. Vernon specializes in the fabrication and erection of movable bridges, heavy highway and railroad bridges, and also fabricates steel for buildings. It has an annual capacity of 25,000 tons and does most of its own erection. During the World war the company built a large number of warehouses for the government for shipment to France and also fabricated steel for ships. In recent years it has placed five bridges across the Missouri river and the same number spanning the Ohio river. It also has installed a number of bascule bridges across the Chicago river at Chicago and it fabricated a portion of the steel used in the Union Terminal building at Cleveland. In securing much of this work, Mr. Conley played an important part.

He was graduated from Denison university, Granville, O., in 1900, with a bachelor of science degree, and in 1902 upon graduating from Ohio State university, Columbus, O., was granted a degree in civil engineering. In July, 1902, he started work in a minor drafting capacity for the Mt. Vernon Bridge Co. By the end of six years, however, his ability was so manifest he was made chief draftsman. He devoted himself so thoroughly to the details of the business that by 1911 he was appointed contracting engineer. This brought him more directly into contact with the sales department, where he displayed more than usual acumen. This was rewarded when in 1914 he was elected secretary. In this capacity he was given more or less opportunity to demonstrate his executive ability and five years later he was elected vice president. In January, 1930, when the board of directors had the task of selecting a successor to the late I. M. Wolverton, Mr. Conley was the logical choice and Jan. 10 he was elected president and treasurer of the organization.

Mr. Conley has not only proved himself an able executive but has taken an active part at all times in affairs of civic interest. He is president of the Mt. Vernon city council, senior warden of St. Paul's Episcopal church, a director of the Knox County Savings bank, director of the Y. M. C. A., and a worker in the Mt. Vernon chamber of commerce. He is a member of the Mt. Vernon Country and Columbus clubs, Faculty Club of Ohio State university, Beta Theta Pi, Phi Beta Kappa and American Society of Civil Engineers.

Men of the Industry

FRANK J. BURD, who has been with Cutler-Hammer Inc., Milwaukee, for the past 30 years, with the exception of two years during the World war when he was electrical engineer for the Midvale Steel & Ordnance Co., Johnstown, Pa., has been appointed Philadelphia office manager for Cutler-Hammer Inc., manufacturer of electrical control equipment. Mr. Burd succeeds T. E. Beddoe, resigned.

* * *

Henry Huss has resigned as manager of the Shaw-Crane-Putnam Machine Co., Muskegon Heights, Mich., builder of electric cranes.

* * *

H. S. Lord has resigned as general sales manager, Nichols & Shepard Co., Battle Creek, Mich., unit of the Oliver Farm Equipment Co.

* * *

H. N. Mathias and V. F. Covert have been elected assistant general auditors of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

* * *

William H. Insley, president of the Insley Mfg. Co., Indianapolis, fabricator of iron and steel and maker of tools, has been named president of the Indianapolis community fund.

* * *

L. Ford Merritt has been appointed Detroit district manager, with headquarters at 2457 Woodward avenue, Detroit, for the Union Chain & Mfg. Co., Sandusky, O.

* * *

P. R. Schilling has been appointed assistant to L. A. Dunn, General Electric Co., Erie, Pa. Mr. Schilling previously was connected with Pratt & Letchworth Co., Buffalo.

* * *

George W. Truxal has been appointed sales manager in the chemical department of the Cleveland-Cliffs Iron Co., Cleveland, to succeed the late Charles B. Hall. He has been with the company since 1908.

* * *

Frederick L. Wanmaker, formerly purchasing agent of the International Mercantile Marine Co., New York, has been made assistant manager of the company, succeeding the late Charles W. Thomas.

* * *

E. L. Roth, for the past three years associated with the Steel Sales Corp., Chicago, as foundry engineer representing the International Nickel Co., New York, has been appointed general manager of the Motor Castings Co., Milwaukee.

* * *

H. R. Bungay Jr. has been placed in charge of the recently-established office at Syracuse, N. Y., of the Yale & Towne Mfg. Co., Stamford, Conn., for the sale and servicing in New York state of its electric industrial trucks, trailers and other material handling equipment.

* * *

Frank S. Callander, assistant cashier of the Monongahela National bank, Pittsburgh, has been elected treasurer and director of the Penn Bridge Co., Beaver Falls, Pa. Walter W. Potts, trust officer of the First National bank, Beaver Falls, has been elected a director of the company.

* * *

G. B. Doane Jr. has been appointed manager of the rail and supply department of the Perry, Buxton, Doane Co., Pennsylvania building, Philadelphia. Mr. Doane previously had been with the company in New York. He succeeds O. D. Cleveland, resigned.

* * *

H. H. Harris, president of the General Alloys Co., Boston, and partner in Noble & Harris, Detroit, consulting engineers, has been elected to the board of directors of Aviation Consolidated Inc. which now controls 10 or more aircraft properties, acquired in 1929-30.

* * *

Frank J. Vogel, formerly in charge of the standards department of the R. D. Nuttall Works of the Westinghouse Electric & Mfg. Co., has become associated with the Thomas Spacing Machine Co., Pittsburgh, builder of fabricating machinery, in the capacity of chief inspector.

* * *

Harry A. Ward, who became identified with the Turner Construction Co., New York, in 1910 and who for the past 11 years has been resident engineer at Buffalo, has been elected vice president in charge of the Buffalo office, 775 Main street. He succeeds the late William E. Lyle.

* * *

H. R. Hooper, for many years dealer for the Ford Motor Co. at Youngstown, O., and distributor of that company's tractors through the Middle West, has been elected chairman of the Youngstown Boiler & Tank Co., Youngstown, O., under a reorganization plan. J. P. Keene continues as president.

* * *

H. L. Barnes, formerly secretary and general manager of the American Forge & Machine Co., Canton, O., was recently elected president and general manager to succeed H. C. Haight.

O. M. Abt is now vice president and C. E. Keafer secretary-treasurer.

* * *

E. D. LeMay, who for several years was secretary to President George Gordon Crawford of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been promoted to assistant to the new president, H. C. Ryding.

J. H. Bowen has been made secretary to the president.

* * *

C. K. Wehn has resigned as Pittsburgh district manager of the H. K. Ferguson Co., Cleveland, to become vice president and general sales manager of the Pennsylvania Fabrication Co., Verona, Pa., with sales offices at 1202 Peoples Bank building, Pittsburgh. He assumed his new duties Feb. 17.

* * *

W. C. Minier and F. C. Lorenz have been added to the Cleveland sales and engineering staff under George R. Harrison, district manager, Reading Chain & Block Corp., Reading, Pa., manufacturer of material handling equipment. Mr. Minier formerly was connected with the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., and Mr. Lorenz was for many years identified with the Cleveland Electric Tramrail Co. Cleveland headquarters are in the Rockefeller building.

* * *

D. S. Sampson has been assigned to the New York office of the A. M. Byers Co., Pittsburgh, under division manager G. W. Hamill. He will cover New Jersey territory.

R. C. Hamlett now is at New Orleans under A. D. Sheere, division manager, Atlanta, Ga.

Irwin P. Young was assigned to the Chicago district, and T. D. Graham to the St. Louis territory, both under

the Chicago division manager, M. G. Henderson.

Frank DeLuce has been made division manager, oil country products division, A. M. Byers Co., Pittsburgh, with headquarters at Tulsa, Okla. His territory will be Oklahoma and Kansas.

* * *

Walter C. Doering of St. Louis was elected vice president of the American Steel Foundries, effective Feb. 15.

* * *

N. H. Small has been appointed advertising manager of the Berger Mfg. Co., Canton, O.

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H. H. Knowles was recently appointed western territory representative, with headquarters in San Francisco, of the Chesapeake Crane Corp., Baltimore.

* * *

Dr. James Lawrie, research chemist, Memphis, Tenn., is now identified with the research staff of the A. O. Smith Corp., Milwaukee. He formerly was connected with the International Harvester Co.

* * *

Leo Merryman, assistant to the vice president and general manager of manufacturing for the American Radiator Co., New York, was appointed manager of the company's Pierce plant at Buffalo. He has been affiliated with the company for the past eight years.

* * *

Joseph H. Bialas has been elected president of the Bethlehem Laboratories Inc., Pittsburgh. Other officers elected are: Vice president, Homer D. Williams, and secretary, Taylor Allderdice. The following directors also were elected: Messrs. Allderdice, Bialas, Williams, L. H. Burnett and V. L. P. Schriver.

* * *

W. M. Stevenson, for 20 years connected with the railway department, with headquarters at Cleveland, of the Crucible Steel Co. of America, New York and Chicago, has been appointed district sales representative with headquarters at 412 Rockford National Bank building, Rockford, Ill.

* * *

Charles M. Moss, assistant manager of the circuit breaker engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed manager of the engineering department at the company's South Bend, Ind., works. He is a graduate of Armour Institute of Technology, Chicago, and has been with the Westinghouse company since 1902.

* * *

A. J. Gloyd, assistant to the vice president and managing director of the Armco International Corp., a subsidiary of the American Rolling Mill Co., Middletown, O., has been appointed manager of sales for the corporation. He will be responsible both for business in the corporation's American made products as well as for increasing its sales of licensee products as produced abroad.

Mr. Gloyd was born near Dennison, O., in 1887. After leaving Ohio State university's preparatory school in 1903, he spent several years in this country and abroad, later engaging in the sheet metal business at McDonald, Pa. He became identified with the American Rolling Mill Co.

A. J. GLOYD

in 1912 as a car loader in the shipping department. After a varied experience in the east works plant at Middletown he was transferred to the order department at the general office and in 1919 he was transferred to the domestic sales division. In 1920 he went to the export department, which later was taken over by the Armco International Corp. and for it he has traveled in many foreign territories.

* * *

Thomas Bradshaw, vice president and general manager of Massey-Harris Co., Toronto, Ont., was elected president at a board meeting Feb. 21. He succeeds J. N. Shenstone, who resigned on account of ill health and was appointed chairman of the board of directors. Four new members were elected to the directorate: A. W. Gifford, general superintendent of factories; C. J. Shenstone, superintendent of Toronto work; George White, vice president, Massey-Harris Co., Racine, Wis.; and B. S. Harris, chief engineer in charge of experimental department.

* * *

N. B. MacNeely, for several years Chicago manager of the building products division, General Fireproofing Co., Yougstown, O., and for the past four years in the reinforcing and building products division of Joseph T. Ryerson & Son Inc., Chicago, was recently elected vice president of Gooder-Henrichsen Inc., Chicago, which does building, moving, underpinning and shoring.

* * *

Otto Roenius has resigned as vice president of the American Carbonic Machine Co., Wisconsin Rapids, Wis., to enter the investment securities field. He entered the business with his father in 1898 when it was known as the Grand Rapids Foundry Co. In 1907 it started to manufacture ice machines, now its principal business, under the name of Wisconsin Ice Machine Co., a subsidiary. Later the two organizations were consolidated and the present name adopted. For some time Mr. Roenius was president and general manager.

* * *

William Rosenthal of Hyman-Michaels Co., St. Louis, was elected president of the St. Louis chapter of the Institute of Scrap Iron and Steel Inc. H. Cohen, L. Galamba and A. Wolf were chosen vice presidents. Frederick Fuld was re-elected secretary, and Ike Bierman, secretary. The executive committee, of which Ben Williams, of Hickman, Williams & Co., was designated chairman, comprises the following: M. Feldman, Dallas, Tex.; Frederick Rupp, Quincy, Ill.; Morris Ferer, Omaha, Nebr.; Sam Riesenbaum, Centerville, Iowa, and J. J. Rubenstein, Alton, Ill.

* * *

James N. Heald was elected president of the Heald Machine Co., Worcester, Mass., maker of grinding machines, assuming for the first time the presidency of the company which bears his name. He succeeds John W. Harrington. Mr. Heald has been treasurer of the company for 26 years. His son Richard succeeds him as treasurer. Other officers elected were: Vice president and works manager, Roger N. Heald; assistant treasurer, Mabel Vaughn; assistant general manager and sales manager, Silas T. Massey; directors, Paul B. Morgan, John W. Harrington, James N. Heald, Roger N. Heald and Richard A. Heald. The business was established in Barre, Vt., in 1826 by Stephen Heald.

* * *

L. W. Haag, formerly chief engi-

(*Concluded on Page* 112)

Syndicates Advance Export Prices

All Continental Iron and Steel Products Raised—Favorable Reaction on Domestic Trade—Important Stainless Steel Plate Order Goes to Sweden

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 25.—(*By Cable*)—Prices of all iron and steel products made on the Continent that are syndicated have been advanced, chiefly for export. The effect in France, according to IRON TRADE REVIEW'S correspondent in Paris, is a favorable reaction on domestic trade as consumers cannot hope for reductions A report from Brussels states Belgian markets are improving. The report from IRON TRADE REVIEW'S correspondent in Berlin states Japan is placing orders for wire rods, Bolivia is buying pipe, and consumers in Great Britain are purchasing semifinished steel. Exports to Brazil and China are unsatisfactory. German domestic business is quiet.

British markets are featureless. Pig iron stocks are increasing but no price reductions have been proposed. Steel business is dull. Sheffield makers have lost an important order for stainless steel plates to Swedish producers.

Uncertain Prices Hamper British Steelmakers

BIRMINGHAM, Eng., Feb. 12.—(*European Staff Service*)—The news of the reduction of the bank rate to 4½ per cent came as a welcome surprise to the Birmingham iron market. The trade was sorely in need of a stimulus and the prospect of cheaper money was received with satisfaction. Conditions have gone from bad to worse since Christmas and in all sections of the trade there is a lack of confidence. Furnaces, with a few exceptions, are short of specifications for foundry iron. Pipe foundries in Derbyshire take a fair quantity of pig iron but makers of light castings are short of work and are not disposed to lay in stocks of material. The outlook in the Black Country forge industry is anything but rosy and there are strong complaints of the high price of iron. There is pressure for a reduction of price and it is now a question as to how long furnacemen will adhere to the rates announced a week ago. In their turn they are endeavoring to force the hands of coke makers who, however, are not willing to accept the low prices being offered at the furnaces. For example, one pig iron maker has contended that he would not pay more than 16s 6d ($4) at the ovens, whereas coke merchants were firm in their belief that 18s ($4.39) was a fair price.

Sterling $4.87

In the Staffordshire finished iron industry best iron bars continue to be taken up by engineering firms but there is no vitality in the other branches of the trade. There is a prospect of a rise in values of Continental materials if the present efforts at stabilization materialize. But even so there cannot be a much larger increase than about 5s ($1.21) which will make practically no difference to the Staffordshire iron maker whose price is about £3 ($14.61) above that of Belgian material.

Local structural engineers have received a good deal of pressure from steel works to give out specifications

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 24	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$17.62	3 12 6	$16.40	3 7 6	$16.40	3 7 6	$17.50	3 12 0
Basic-Bessemer	16.65	3 8 6†	15.80	3 5 0	15.80	3 5 0	16.77	3 9 0
Hematite, Phosphorus 0.02-0.05	18.96	3 18 0	24.70	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$29.77	6 2 6	$22.84	4 14 0	$22.84	4 14 0	$22.84	4 14 0
Wire rods	41.31	8 10 0	30.38	6 5 0	30.38	6 5 0	30.38	6 5 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.74c	8 0 0	1.18c	5 7 6	1.18c	5 7 6	1.18c	5 7 6
Structural shapes	1.68c	7 15 0	1.12c	5 1 6	1.12c	5 1 6	1.12c	5 1 6
Plates, ship, bridge and tank	1.79c	8 5 0	1.44c	6 10 6	1.44c	6 10 6	1.44c	6 10 6
Sheets, black, 24 gage	2.17c	10 0 0	2.26c	10 5 0	2.26c	10 5 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.50c	11 10 0	2.52c	11 8 9	2.52c	11 8 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.27c	5 15 0	1.27c	5 15 0	1.23c	5 12 0
Plain wire, base	2.06c	9 10 0	1.43c	6 10 0	1.43c	6 10 0	1.54c	7 10 0
Galvanized wire, base	3.04c	14 0 0	1.82c	8 5 0	1.82c	8 5 0	1.87c	8 10 0
Wire nails, base	2.39c	11 0 0	1.49c	6 15 0	1.49c	6 15 0	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.56	0 18 9	.....	.....	.....	.....	$ 8.99	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.62	3 12 6	$19.21	490(2)	$17.58	630	$20.30	85
Basic pig iron	16.65	3 8 6	20.58	525(1)	15.62	550	21.73	91
Furnace coke	4.25	0 17 6	6.59	168	6.28	225	5.13	21.50
Billets	29.77	6 2 6	24.30	620	24.83	890	28.89	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.74c	8 0 0	1.26c	700	1.22c	940	1.53c	141
Shapes	1.84c	8 10 0	1.26c	700	1.21c	935	1.50c	138
Plates, ship, bridge and tank	1.95c	9 10 0	1.42c	790	1.46c	1,125	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.65c	1,470	2.73c	2,100	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.55c	11 15 0	3.55c	1,970	3.45c	2,650	3.78c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.43c	225
Bands and Strips	2.17c	10 0 0	1.44c	800	1.53c	1,175	1.77c	164

*Middlesbrough; †Basic-‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 17s 6d ($4.25) f. o. b. Ferromanganese £21 13s 0d ($105.22) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

as they find it difficult to complete rolling programs. Unfortunately for mills the tonnage of structural business being placed does not warrant a free flow of specifications for plates and joists as orders are being worked off rather quickly. The steel association maintains its prices for building steel. The increasing use of all-steel railway vans and cars is proving of assistance to plate mills and several large orders from South America have lately been booked, while the London & North Eastern railway has just placed fifty 40-ton wagons and twenty-five 50-ton wagons with the Metropolitan-Cammell Carriage Wagon & Finance Co., Birmingham. The same railway announcing its locomotive construction program for 1930 is to build 144 new engines in its own workshops.

It is reported from Middlesbrough that several steel furnaces are idle owing to dearth of business and output of the pig iron is known to be too heavy for the present demand. Ironmakers there have to compete with Midland material in Scotland in addition to the Continental pig iron which is being bought. In Middlesbrough itself the import of Continental iron has been checked but as yet the volume of exports is disappointing. The January total was slightly better than in December.

Weakness has overtaken the east coast hematite market. Sellers have difficulty in realizing £3 18s ($18.97) per ton for mixed numbers. The fall in ore prices so far has not brought benefit as they are heavily committed under old contracts at higher figures than those now ruling. On the Birmingham exchange inquiry for hematite was slow as consumers in this district have sufficient stocks to work from.

The activity which marked the pig iron market in North Lancashire and Cumberland in the latter part of 1929 has given way to the depression which is affecting all markets. Most of the make is going to other parts of Britain, especially superior qualities of low phosphorus iron. In the steel section of the trade the Barrow and Workington mills work intermittently as orders come in.

Birmingham merchants are finding it difficult to make sales of Continental material in view of unsettled conditions and the instability of prices. It is stated that international sales offices have already been established for semis, rod iron, steel bars, coarse sheets and hoops. Belgian No. 3 bar iron has been selling at the low price of £5 1s 6d ($24.71) f.o.b. during the past week.

German Steel Leader Shows Growth

Berlin, Feb. 11.—(*European Staff Service*)—The following are a few details taken from the annual report of the Vereinigte Stahlwerke A. G., or United Steelworks Corp. of Germany, for the financial year ending Sept. 30, 1929.

The output of pig iron was 6,007,953 metric tons, compared with 6,518,682 tons the previous year; raw steel, 6,419,796 tons, against 6,945,186 tons; rolled products, 4,708,731 tons, compared with 5,113,996 tons. Production during the past year was less than in the year 1927-28.

Thirty million marks have been devoted to modernizing plant, with a resulting increased efficiency; for example, in the collieries only 32 furnaces have been operated in the power plant, compared with 48 before amalgamations took place, and yet the output of coal has increased from 77,300 metric tons per day to 93,300 tons.

Sales in the domestic market reached 5,718,177 metric tons, compared with 6,101,830 tons in the preceding year, and export sales totaled 2,262,016 tons, against 2,184,835 tons. An increase in export sales thus enabled the concern to work its plant satisfactorily throughout the year. However, the volume of orders at the end of the financial year was less than on Sept. 30, 1928, and the tendency is toward a further decline.

The United Steelworks of central Germany, a subsidiary, produced 1,843,308 metric tons of coal, as compared with 1,567,080 tons in 1927-28, and 538,167 tons of raw steel, as against 477,511 tons. The turnover increased from 92,307,721 marks to 107,521,510 marks ($22,000,000 to $25,500,000).

French Output at Peak

Paris, Feb. 10.—(*European Staff Service*)—The output of pig iron in France in 1929 showed an increase of 3.15 per cent over 1928.

The output of steel ingots and castings in 1929 showed an increase of 2.95 per cent. These figures constitute records in the industrial history of France. The highest monthly figures were: 904,000 tons of pig iron in January and 847,000 tons of steel ingots and castings in October.

The December output of pig iron was composed of 667,000 tons of basic bessemer, 104,000 tons of phosphorus foundry, 10,000 tons of semiphosphorus, 39,000 tons of hematite foundry, 39,000 tons of hematite steelmaking pig iron and 15,000 tons of ferroalloys.

The December output of steel ingots and castings was composed of 793,000 tons of ingots and 20,000 tons of steel castings, including 554,000 tons of basic bessemer, 235,000 tons of open hearth, 8000 tons of acid bessemer, 1000 tons of crucible and 15,000 tons of electric steel. Comparisons follow, in metric tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1926	155	785,965	702,500
1927	142	774,785	689,610
1928	153	841,415	782,995
1929	156	870,000	805,500
1929			
Jan.	157	904,000	842,000
Feb.	157	782,000	743,000
March	156	880,000	805,000
April	158	871,000	810,000
May	157	897,000	820,000
June	155	865,000	795,000
July	156	878,000	815,000
Aug.	156	893,000	827,000
Sept.	157	857,000	763,000
Oct.	157	894,000	847,000
Nov.	156	865,000	790,000
Dec.	156	874,000	813,000
Total		10,441,000	9,666,000

Century Electric Co., St. Louis, will act March 11 on a proposal to increase the capital stock from $5,000,000 to $7,500,000.

French Steel Market Sees Most Factors Favorable to Business

PARIS, Feb. 10.—(*European Staff Service*)—Opinion varies as to the present tendencies of the French iron and steel market. Some believe that for a certain period business will mark time, while others consider the position quite healthy. Conditions, of course, vary with different works and with the class of products considered. Rolling mills in the north and east cannot offer delivery earlier than two or three months. In the meantime the volume of new business is comparatively small. Inquiries from agricultural districts are restricted because crops have been only moderate, and farmers find it difficult to sell their wheat. Generally speaking, the consolidation of business in the hands of syndicates makes consumers fear that prices have reached their lowest level, and already certain works are trying to improve on prices which recently have been quoted.

On the whole, the outlook is fairly good. The building trade is active, and important orders are expected from that quarter. It is noted with satisfaction that the volume of deliveries in kind from Germany is decreasing, and this will be gratifying to French industry.

The fuel market is satisfactory. There is no change in pig iron prices,

Franc—3.93c

and the market shows no particular features. In semifinished activities are satisfactory. The comptoir has reduced the extra for open-hearth steel, which now will be 125 francs ($4.90) for billets and 100 francs ($3.90) for blooms. This extra was 150 francs ($5.90) for both products.

The structural steel market is brisk. There is some competition in merchant steel, but efforts are being made to prevent a further drop in prices, and leading representatives of works in the east have received instructions to refuse price concessions on new orders. In the meantime consumers are simply meeting requirements as they are needed. The basis price for concrete bars is 650 francs ($25.50). In this market concessions often are made, even at this comparatively low price. For merchant bars mills in the north quote from 710 to 720 francs ($27.80 to $28.20), and in the east the average price is 680 to 690 francs ($26.55 to $27.05).

The tendency in wire products is good, and the wire rod syndicate is well supplied with orders.

Parker Heads Chicago Scrap Chapter

Frank B. Parker, of Briggs & Turivas, has been elected president of the Chicago chapter, Institute of Scrap Iron and Steel Inc. S. J. Posen, Ohio Iron & Metal Co., was elected chairman of the executive committee. Other officers elected include Walter Bregman, Price Iron & Steel Co., first vice president; Ben Kaplan, M. S. Kaplan Co., second vice president; E. G. Howell, Erman-Howell & Co., treasurer; and Henry Rosenthal, secretary.

Members of the executive committee, in addition to the officers and the chairman include W. J. Ross, Hyman-Michaels Co.; Dan R. Cohen; Max Patinken, Peoples Iron & Metal Co.; Morton D. Teller, Teller Iron Co.; Jacob Lanski; Frank Schwartz, B. Colitz & Co.; Arthur Price, Price, Watson Co.; N. Silver, Silver Iron & Steel Co., Racine, Wis. William Ross, who was the previous chairman of the executive committee, has been nominated to the national board of the institute, for a three-year term.

Argentine Puts Ban on Scrap Exports

To aid in developing an iron and steel manufacturing industry within the country the president of the Argentine republic has issued a decree prohibiting exportation of iron and steel scrap, according to a report received in the department of commerce from Trade Commissioner Charles R. Ducote, Buenos Aires. Iron ore is not taken in commercial quantities in Argentina at this time and production of cast or wrought iron or of steel is dependent upon the presence of iron and steel scrap.

On the basis of the scrap heretofore exported from Argentina this prohibitory decree should make available to the local iron and steel industry an additional supply of scrap of approximately 40,000 metric tons annually as exports in 1928 totaled 41,290 tons, in 1927 41,963 tons, in 1926 8897 tons and in 1925 65,448 tons. Statistics indicate that Italy was the principal purchaser of Argentine scrap. Chile was also an important market in the two earlier years.

Hilb Heads Scrap Men

William M. Hilb, Hilb & Bauer, Cincinnati, has been elected president of the Cincinnati chapter of the Institute of Scrap Iron and Steel Inc., Samuel N. Summer, Joseph Schonthal Co., Columbus, O., has been elected vice president, and R. W. Kolkmeyer, Walter-Wallingford & Co., Cincinnati, secretary-treasurer. The members of the executive committee, in addition to the officers, include M. D. Friedman, M. D. Friedman Co., Ashland, Ky.; Harry Silverstein, A. P. Silverstein & Son, Charleston, W. Va.; Lee J. Workum, Schadel-Workum Co., Portsmouth, O.; and B. Shottenfels, David J. Joseph Co., Cincinnati.

Steel Castings Up

Washington, Feb. 25.—New orders for steel castings in January rose slightly over the preceding month, but were lower than January a year ago. Total production, however, showed a slight drop. Department of commerce figures, among which is a revised total for 1929, follow:

	—Bookings—		——Production——	
1929	Total net tons	†Railway specialties	Total net tons	†Railway specialties
Jan.	124,313	64,809	93,413	35,689
Feb.	115,639	58,903	97,568	40,282
March	130,836	60,743	115,163	49,562
April	144,616	75,625	121,941	53,458
May	113,329	44,919	127,189	58,636
June	95,201	34,947	116,221	54,154
July	103,356	37,731	118,100	51,989
Aug.	98,697	35,906	118,458	50,548
Sept.	85,859	33,463	106,268	44,609
Oct.*	134,313	72,421	119,569	50,011
Nov.*	97,065	41,350	109,321	49,915
Dec.*	94,653	41,179	106,927	37,154
Total (year)	*1,337,877	601,996	1,350,138	576,007
1930				
Jan.**	97,228	39,281	102,133	41,465

*Revised.
**Preliminary.
†For tonnage of miscellaneous castings deduct railway specialties from the total.

Drop in Barrel Output

Washington, Feb. 25.—January shipment and production of steel barrels fell from the rise shown the previous month, and with the exception of November, 1929, touched a low mark for the past 11 months. Production was 48.7 per cent of capacity, compared with 54.7 in December, 1929, and 48.4 in January of the same year. Figures as reported by department of commerce for 27 companies operating 32 plants follow:

			Unfilled orders for delivery	
	Production	Shipments	within 30 days	beyond 30 days
1929				
Jan.	558,492	548,581	319,704	1,342,006
Feb.	567,398	563,532	345,365	1,198,481
March	742,165	743,407	393,941	1,076,317
April	771,584	775,481	333,614	935,430
May	836,532	834,699	316,882	899,090
June	774,853	779,567	644,079	904,920
July	790,175	782,411	377,855	994,842
Aug.	806,574	809,860	358,150	847,509
Sept.	663,531	653,890	302,632	768,518
Oct.	629,976	638,681	298,550	603,071
Nov.	572,621	567,257	285,295	708,306
Dec.	624,365	618,003	294,797	1,044,136
Total, (year)	8,338,266	8,315,369	.....	.....
1930				
Jan.	582,407	574,763	278,283	1,130,228

Szeely Aircraft & Engine Co., Holland, Mich., has increased its capital from 100,000 to 200,000 no par shares.

Scrap Institute Plans Annual Convention

Institute of Scrap Iron and Steel Inc. has announced a tentative program for its second annual convention at the Stevens hotel, Chicago, March 4-6. The first day will include a forum on insurance and opening of the exhibit of the National Safety council and meetings of the trade relations, traffic and trade customs committees. Committee meetings March 5 will include the arbitration and research committees, a dinner meeting of the board of directors and a forum on costs and yard operation.

The final day will include the business session of the institute, an address by the director general and election of new directors. Prof. Spurgeon Bell, Ohio State university, will deliver an address on economics of the scrap iron industry. The annual banquet will be served at 6:30 o'clock. Guest speakers have not been announced.

Eighteen Railroads Add Electric Equipment

Eighteen railroads in the United States, which formerly operated by steam only, now operate electrically on about 4300 miles of track, according to a survey of railroad electrification just completed by the Copper and Brass Research association. This electrification represents about 1900 miles of route, and of the 4300 miles of track approximately 3150 miles are mail line track. In this electrified territory, the railroads have in service 465 electric locomotives and 2750 multiple-unit cars for passenger service. Of these cars, 2150 are motor cars and the rest are trailers.

Danger in Wrong Word

In the interest of safety, International Oxygen Co., Newark, N. J., is waging a campaign among welders and metal cutters to discourage the growing practice of referring to oxygen as "air." A brightly colored card containing a warning against danger of confusing the two and possibly interchanging them is being distributed.

New Manchurian Stack In

Anshan Iron & Steel Works, Mukden, Manchuria, has completed a 500-ton blast furnace which has just been blown in, according to information to the department of commerce from Trade Commissioner J. J. Ehrhardt, Mukden. The company already had two 300-ton furnaces in blast.

Machinery

February Awards to Show Increase Over January—Buyers' Market Developing at Chicago—Automotive Buying Livelier

MACHINE tool sales for February for most dealers show some improvement over January awards although the market still is characterized by spotty buying and small commitments. Implement works have supplied a fair volume of orders in the Chicago territory where reports of a buyers' market are heard, although no price reductions are mentioned. Some railroad buying is noted, two large roads in the Chicago district being in the market while two railroad lists involving about 25 tools are yet to be placed in the New York market. Aluminum Co. of America is reported to have awarded plate mills for its Messina, N. Y., plant to German interests. Automobile accessory plants are operating on heavier schedules. Export business is strong.

New York, Feb. 25—Volume with most machinery dealers and builders this month has been larger than for January. The gain with some is not pronounced, but a few note a decided gain. The month has been one of spotty buying, a fair week being followed by a lull. One dealer with a general line of mostly standard equipment booked a highly satisfactory total, most of which had been pending but about 30 days. Orders were off during the last week, but inquiry increased. Both buying and inquiry are well spread, prices holding unchanged. Delivery is fair on standard equipment, but heavier machines are still subject to delay, little such material being built for stock. A fair inquiry prevails for radial drills and lathes. Two railroad lists involving about 25 tools are yet to be placed. Early action is expected on some of this equipment, competition for which has been keen.

Grinding machinery moves in slightly heavier volume, still handicapped by subnormal buying on the part of automobile makers. The latter have placed some equipment, but not as much as usual. Auto accessory plants are operating on longer schedules as are bearing plants, but neither are taking much new equipment. Export business holds up well.

Worcester, Mass., Feb. 25.—Despite some tendency to aggressive buying the market is still under the handicap of spotty buying and small commitments generally. Demand is slight for lathes and drills but grinders are reported in strong demand. Textiles are weak. In the small tool field some activity is reported. Automotive demands are beginning to make themselves felt.

Pittsburgh, Feb. 25.—Machine tool awards hold at about the rate of the preceding several weeks and are considered in favorable volume by most sellers. The market continues to lack large lists both in inquiry and purchases although a fair volume of pending work, made up of indvidual lots and three to four tools at a time, is noted. Railroads continue inactive in the market, with the exception of occasional purchases of indvidual tools, while pending business for steel companies also is light. Aluminum Co. of America is understood to have awarded plate mills for its Messina, N. Y. plant to German interests.

Cleveland, Feb. 25.—Conflicting reports as to February totals are heard here, one builder stating that February sales will show a 20 per cent increase over January; another reporting February even with January and prospects for a similar month in March; and a third dealer saying that February business had slipped from the January level due to the shorter month principally. However, sales totals are rather doubtful indicators of the general trend as one substantial list might put a seller's total for the month considerably over what would be a true barometer of sales. The market in general, although somewhat spotty, is regarded as being in a healthy condition. Practically no automotive buying is under way in this territory although reports are heard that Hupp-Chandler interests are planning to build their own rear axle assemblies and if so will require sizeable lists of tools. A rumor also is current that White Motor Co. is planning some machinery buying, substantiated by the fact that some checking over of requisitions and requests for appropriations has been in process at that plant. Buying in general is for replacement purposes rather than for any new projects.

Chicago, Feb. 25.—While numerous machine tool inquiries are pending in this district, most dealers have light backlogs. Sales for the month will equal or slightly surpass January. Several houses have gained over January because of some orders placed by International Harvester Co. for its Farmall tractor works, at Rock Island, Ill., and at Chicago, and a few additional implement works orders. Santa Fe has started buying against its large list, and it is understood the St. Paul will place some orders before the end of the month. Grigsby-Grunow Co., Chicago radio manufacturer, virtually has completed its inquiry list of about 25 items for equipping a part of its plant for the manufacture of refrigeration machinery. Inquiries in this market are widely scattered and include about 20 presses, a 60-inch lathe, and a number of smaller lathes and shapers, besides horizontal boring machines. Eagle Sheet Metal Mfg. Co., Chicago, as a result of a fire which damaged its Chicago plant last week, will order replacements. Several of the implement plants are figuring on used tools. It is pointed out that a buyers' market is developing, although no reports are heard now of price reductions. Chicago board of education is receiving bids on a 9-foot motor-driven screw cutting engine lathe for Tilden Technical high school.

Men of Industry

(*Concluded from Page* 108)

neer of the Apollo Steel Co. and an important figure in the recent expansion program of that company, has resigned to become chief engineer of the Michigan Steel Corp., Detroit.

* * *

M. E. Danford, assistant to the vice president of the American Rolling Mill Co., Middletown, O., will sail for England early in March with William Hoover, Bernard Draut, C. A. Wolfe and E. J. Goldschmidt to supervise operations at the company's new unit, the specialty steel division, John Summers & Sons Co. Ltd., Shotton works, Shotton, Chester, England. Mr. Danford recently completed the negotiations in England, which led to the signing of an agreement between the two companies. He will return next summer after actual production at the plant has commenced.

Mr. Hoover, who has been with the company since 1904 in various capacities at different plants and who last year was manager at Elyria, O., will be Shotton plant manager. Since early this year he has been associated with Armco International Corp., Middletown.

Mr. Draut, continuously engaged in sheet rolling mill work for more than 20 years, and with American Rolling Mill Co. since 1906, will familiarize British workmen with the company's rolling practices.

Mr. Wolfe, identified with the company since 1912, latterly as foreman of cold rolling of strip at Butler, Pa., will supervise cold rolling at Shotton.

E. J. Goldschmidt, head of the company's statistical department, will establish a cost system at the British plant.

CONSTRUCTION *and* ENTERPRISE

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North Atlantic

WILMINGTON, DEL.—Cork Insulation Co., 154 Nassau street, New York, proposes to construct a plant with power equipment to be needed, on a site owned here.

ROCKLAND, ME.—Rockland Welding Works was recently damaged by fire.

BOSTON—Machine shop belonging to the Boston Elevated railroad, 31 St. James avenue, in yard on Harrison avenue was damaged by fire recently. Loss is estimated at $100,000.

MALDEN, MASS.—E. J. Lamothe Co., 25 Chestnut avenue, Somerville, Mass., is receiving bids for a 1-story, 97 x 137-foot plant for manufacture of sheet metal products at Green street and Willis avenue here. Architects are Miller & Levi, 46 Cornhill, Boston.

SALEM, MASS.—Eastern Massachusetts Electric Co., 200 Devon street, Boston, plans construction of a large power station here that will cost approximately $15,000,000. Plans have been discussed by Albert B. Tenney, vice president, Charles H. Tenney & Co., Boston, investment bankers.

SOMERVILLE, MASS. — Somerville Iron Foundry Co., Nathan P. Reed, president, Washington street and Boston & Maine railroad, will start work soon on a plant unit costing about $50,000 to be located on Mystic avenue.

WALTHAM, MASS.—Middlesex College of Medicine and Surgery, care president, 473 Beacon street, Boston. plans several buildings to be erected, including a power house, on South street here.

BLOOMFIELD, N. J.—Bakelite Corp., 230 Grove street, plans construction of a 3-story manufacturing plant costing about $100,000 and will award contracts soon. R. Bolton, 45 Branford place, Newark, N. J., is architect.

CAMDEN, N. J.—RCA Victor Co. plans an expansion program involving expenditure of more than $7,500,000 during 1930, a large part of which will be spent on construction of a new building and equipment, to include machine tools, small tools and conveyors. The building will be used in the manufacture of radio parts, and will be located at Delaware avenue and Front street. Edward E. Shumaker is president.

HACKENSACK, N. J.—Hackensack Water Co., Main street, advises that contract for 1-story workshop at Hackensack avenue and Temple street, has been let to Stevens, Alquist Co., and that the shop dimensions will be 30 x 70 feet.

NEWARK, N. J.—Natural Carbonic Gas Co., McClellan street, will receive bids about March 1 for the construction of a 1-story, 45 x 60-foot engine room addition costing about $40,000. L. L. Bansom, 15 Park row, New York, is architect, and will take the bids.

WEST PATERSON, N. J.—Alloys Foundry Corp., manufacturer of aluminum alloy and copper alloy castings for the aviation and automotive industries, incorporation of which was noted Feb. 20, has leased a 1-story plant at McBride avenue and Jackson lane. C. P. Brown is president.

BROOKLYN, N. Y.—Lynd Radio Mfg. Co., 66 Wycoff avenue, suffered loss to plant and equipment by fire recently.

BUFFALO—Niagara Machine & Tool Works, care G. R. Munschauer, president, 637 Northland avenue, has preliminary plans for a plant addition. H. E. Plumer, 775 Main street, is architect.

LONG ISLAND CITY, N. Y.—Colonial Dye Works Inc. will build an electric and steam power unit with equipment in connection with plant expansion. Architect is I. M. Fenichel, 114 East Thirty-second street, New York.

ERIE, PA.—G. H. Williams Co., manufacturer of truck trailer equipment, Haybarger lane, plans to construct a 1-story, 60 x 80-foot plant addition.

MANHEIM, PA.—Hershey Machine & Foundry Co., care J. K. Nissly, plans a 1-story plant addition. M. R. Evans is architect.

PHILADELPHIA—E. A. France, 6736 State road, closed bids recently for a 1-story machine shop and plant at State road and Cottman street, costing about $20,000. S. G. Matthews, 2016 Lippincott street, is engineer.

PHILADELPHIA—Morris Wheeler & Co. Inc., Thirtieth and Locust streets, plans a 240 x 420-foot steel fabricating plant at Fox and Roberts avenue. Julian S. Simsohn, Broad and Girard avenues, is architect and engineer.

East Central

CHICAGO—Four Wheel Automatic Jack Corp., recently incorporated, has leased a plant for manufacturing at 3845 Ravenswood avenue.

CHICAGO—Chicago, Milwaukee, St. Paul & Pacific railroad, C. F. Loweth chief engineer, is inquiring for machine tools to include lathes, millers, shapers, grinders, presses and planers.

CHICAGO—Crane Co., manufacturer of plumbing supplies, 836 South Michigan avenue, suffered damage by fire recently in one of the manufacturing units here at 4100 South Kedzie avenue.

CHICAGO—B. H. Bunn Co., 7329 Vincennes avenue, manufacturer of package tying machines, has awarded general contract to the Chicago Industrial Construction Co. for a new plant building at 7604-8 Yale avenue, that city. The building is to be of steel and insulated roofing construction.

DAVENPORT, ILL.—Nichols Wire Sheet & Hardware Co., 1725 Rockingham road, suffered loss by fire in wire drying department recently.

FULTON, ILL.—Cullen Co., Clinton, Iowa, manufacturer of boilers, stacks and tanks, has acquired the plant of the Mississippi Valley Stove Works here, and will move to this location after extensive repair work and remodeling have been completed.

SYCAMORE, ILL.—Kellman Mfg. Co., maker of gas heated laundry machinery, has taken over the local plant of the Illinois Thresher Co. and intends to begin production. Frank B. Watson is president.

ANDERSON, IND.—Ames Shovel & Tool Co. recently sustained fire damage estimated at $300,000. The main production building was burned but the forging room, warehouse, rolling mill and office were saved. Chief loss was to machinery and shovel blades. No statement concerning reconstruction has been made.

AUBURN, IND.—Auburn Stoker Corp. recently bought the plant building formerly owned by the Auburn Furniture Mfg. Co., on

West Eleventh street, and will make alterations to the new property where some of its manufacturing operations will be placed.

TERRE HAUTE, IND.—American Can Co., 120 Broadway, New York, has taken several options here on sites for possible erection of a manufacturing plant to cost approximately $1,500,000. It is doubtful if the plant could be equipped for operation before the first of next year, and action is pending co-operation of the city here.

DETROIT—Electrograph Co., 725 West Grand street, expects to erect a 2-story manufacturing plant at Fort and Vinewood avenues. Plans are by Weston & Ellington, architects, 1507 Stroh building.

DETROIT—Lighting commission is having plans prepared by Smith, Hinchman & Grylls, architects and engineers, 800 Marquette building, for a substation costing approximately $100,000, to be erected at Lawton avenue and Joy road. Plans are expected to mature in June.

DETROIT—Commercial Steel Treating Corp., 6535 Livernois avenue, has acquired property at Military and Tireman avenues for plant expansion. A 1-story plant to cost approximately $50,000 will be erected and contract has been placed with the H. C. Wright Building Co., 6177 West Warren street.

HOUGHTON, MICH.—State administrative board, Lansing, Mich., has awarded contract for additions and remodeling of Michigan College of Mining and Technology here to R. J. McLeod & Co., Exchange building, Duluth. (Noted Jan. 9.)

AKRON, O.—Portage Machine & Engineering Co., 99 Steiner avenue, will rebuild plant damaged by fire, loss of which is estimated at $100,000. John Zimark Jr. is in charge.

CLEVELAND—Atlas Steel & Supply Co., 4401 Trumbull avenue, has plans for a 2-story, 90 x 144-foot plant addition to be erected in late spring, following completion of warehouse now being built.

COLUMBUS, O.—City, care council, proposes to establish hydroelectric plants at the Griggs and O'Shaughnessy dams here, pending approval by voters at November election of a bond issue for $350,000.

FREMONT, O.—Henkel Claus Co., manufacturer of cutlery, suffered damage by fire to plant recently.

TOLEDO, O.——Electric Power Maintenance Co., 24 Seventeenth street, is building a 60 x 200-foot building. A 1-story repair unit on Sixteenth street will be added.

KELLOGG, W. VA.—West Virginia Construction Co., N. K. Sneed president, will build a machine shop and repair unit here, to be privately owned and used for the company's equipment maintenance.

ELROY, WIS.—Common council, care E. E. Brintnall, city clerk, has voted in favor of installation of a diesel type generating plant, and bids will be taken in March or April.

FORT ATKINSON, WIS.—James Mfg. Co., W. D. James president, maker of cattle stanchions, has purchased an unoccupied plant here for expansion purposes.

JANESVILLE, WIS.—Parker Pen Co., 219 Court street, has awarded contract for additions, a sprinkler system, and erection of a 1-story printing plant to T. S. Willis Co., local contractor. (Noted Jan. 16.)

MILWAUKEE—Milwaukee Auto Body Inc., 602 Fourth street, plans a 2-story autobody repair shop.

West Central

MEXICO, MO.—Mexico Refractories Co., recently organized with J. B. Arthur president, will construct plant buildings for the manufacture of fire brick near here.

ST. LOUIS—Baldor Electric Co., 4353 Duncan avenue, will build a shop addition, 70 x 100 feet.

ST. LOUIS—LaClede Christy Clay Products Co., 5900 Manchester avenue, plans construction of a machine shop adjoining plant here.

ST. LOUIS—Union Electric Light & Power Co., Twelfth and Locust streets, is building a garage and warehouse building, 160 x 300 feet, to include auto repair shop. A power substation will also adjoin. Location is at Wabash railroad and Page boulevard.

ST. LOUIS—Usona Mfg. Co., 3520 Chouteau avenue, advises that new 1-story wire plant addition, contract for which has been let to Kremer & Voirol, 1416 Chemical building, will include a foundry and that equipment needed will include crane, core ovens, and usual foundry equipment requirements.

CAVALIER, N. D.—City, care common council, plans a municipal power plant.

Southern States

AUBURN, ALA.—Alabama Polytechnic institute, care Dr. Bradford Knapp, president, has awarded contract for construction of four buildings to W. L. Coston, Bessemer, Ala. Entire construction is to cost $752,000. Included is a machine shop, 50 x 250 feet, that will cost $75,000. Warren, Knight & Davis, Protective Life building, Birmingham, Ala., are architects.

BIRMINGHAM, ALA.—Tennessee Coal, Iron & Railroad Co., H. C. Ryding, president, plans erection of a sheet mill here.

BIRMINGHAM, ALA.—Birmingham airport, care A. J. Hawkins, city engineer, advises that it would like to receive literature on machinery for a proposed shop to be erected at the proposed airport. (Noted Feb. 20.)

BIRMINGHAM, ALA.—Jaffee Iron & Metal Co., North Twenty-eighth street, which was damaged by fire recently, has awarded contract to Inglenook Construction Co., 4011 First avenue, for reconstruction of warehouse. Cost will be about $25,000.

JACKSONVILLE, ALA.—State normal school has awarded contract to A. J. Honeycutt Co., Martin boulevard, Birmingham, Ala., for three units one of which is a 1-story boiler and shop building. Warren Knight & Davis, Protective Life building, Birmingham, are architects.

PARAGOULD, ARK.—City, care J. T. Craig, mayor, proposes to build a municipal power plant.

JACKSONVILLE, FLA.—Burwell Motor Co. has awarded contract to George D. Auchter for a 2-story, 100 x 144-foot addition to motor repair shop. Blair Burwell Jr. is president.

ATLANTA, GA.—Prest-O-Lite Co. Inc., 30 East Forty-second street, New York, has awarded contract to A. K. Adams Co., 542 Plum street, here, for warehouse and shop building here to cost about $80,000. (Noted Feb. 20.)

COLUMBUS, GA.—Board of education has awarded contract to W. C. Whitaker for an industrial high school building to cost approximately $50,000.

COLUMBUS, GA.—City school board will call for bids about March 5 for the construction of a negro vocational school to contain shops, automobile mechanical department and other units. Smith & Biggers are architects. Cost is estimated at $70,000.

PADUCAH, KY.—City proposes building a power plant. Burns & McDonnell Engineering Co., 400 Interstate building, Kansas City, Mo., is engineer.

BATON ROUGE, LA.—East Baton Rouge parish, care Joseph Gebbelin, president, will receive bids on March 11, instead of date previously noted, for airport facilities to include motor repair shops. (Noted Jan. 16.)

WINNFIELD, LA.—Gulf Public Service Co., New Iberia, La., plans improvements and extensions to local power station here that will cost approximately $70,000.

CORINTH, MISS.—Chamber of commerce and National Airways Systems, Peoria, Ill., will erect machine shop, hangar and buildings here.

INDIANOLA, MISS.—Indianola Oil Mill Co. will rebuild electric power unit recently damaged by fire.

DURHAM, N. C.—Durham Coca Cola Co., W. K. Rand owner, will erect a plant to cost about $100,000, which will include a machine shop.

MONROE, N. C.—Seaboard Air Line railroad, Savannah, Ga., will receive bids shortly for the construction of a machine and engine shop to be erected here.

OTEEN, N. C.—United States veterans' bureau, Frank T. Hines, director, Washington, has approved expenditures for the construction of a new boiler house, laundry and central steam

heating plant for Veteran's hospital, number 60, here.

COLUMBIA, S. C.—State highway department, care Pen M. Sawyer, chief engineer, received bids recently for construction of machinery maintenance shops at Conway, S. C., and at Dillon, S. C. Cost is unstated.

CHATTANOOGA, TENN.—Lucey Mfg. Co., maker of oil well supplies, Nineteenth and Grove streets, will install new machinery, equipment and a boiler plant to cost approximately $50,000.

CHATTANOOGA, TENN.—Tennessee Stove Works, Ben M. Rawlings, president, has let contract to Ferro Enamel Supply Co., Keith building, Cleveland, for the electric enameling furnaces to be installed in enameling plant addition here costing $200,000. (Noted Jan. 30.)

KNOXVILLE, TENN.—Knoxville Iron Co. will spend about $20,000 for repairs to plant.

MARYVILLE, TENN.—Tennessee Electric Gas Co., having been recently chartered as a subsidiary of the Utility Gas & Electric Co., Chicago, will erect a power plant here soon that will cost about $150,000.

AMARILLO, TEX.—Board of education, care George M. Waddill, advises that architect for 1-story manual training unit for Buchanan street school is E. F. Rittenberry, city.

CORPUS CHRISTI, Tex.—City recently closed bids for construction of an airport to include repair shops.

DALLAS, TEX.—Claude Neon Federal Co., 225 North Michigan avenue, Chicago, plans a plant here for the manufacture of signs. W. A. Keating, operations manager in Chicago, is considering selection of site.

SAN ANTONIO, TEX.—San Antonio Machine & Supply Co., 325 North Center street, recently received bids for a 2-story machine shop addition. Herbert S. Green is architect.

SWEETWATER, TEX.—International Harvester Co., 606 South Michigan avenue, Chicago, will erect a branch building here to include repair shops. Building will be 1 and 2-story, about 200 x 450 feet.

WAELDER, TEX.—City, care council, has under consideration plans for installation of a municipal light and power plant.

POMONA, CALIF.—Courier Monoplane Co., 1255 West First street, Long Beach, Calif., plans erecting a plant here to cost about $50,000.

CANON CITY, COLO.—Southern Colorado Power Co., care W. N. Clark, general manager, West and Fourth and North Main streets, Pueblo, Colo., plans power plant expansion here.

PUEBLO, COLO.—E. F. Gobatti Mfg. Co., care John Gobatti, president, 311 South Victoria avenue, contemplates construction of a machine shop on West Fifth street.

PORTLAND, OREG.—Consolidated Truck Line, Twenty-first and Quinley streets, has awarded contract for a 1-story repair shop and garage to cost approximately $85,000.

RICHFIELD, UTAH—City, care F. G. Martines, mayor, has plans in progress for construction of an airport.

CHEHALIS, WASH.—Palmer Lumber & Mfg. Co. has received a permit to erect a mill plant here on a site recently purchased. New equipment includes usual lumber machinery.

EATONVILLE, WASH.—City will vote March 11 on proposition to issue $30,000 in bonds for improvement of water system.

EVERETT, WASH.—Puget Sound Power & Light Co., Seventh and Olive streets, Seattle, plans erection of a substation here that will cost about $60,000.

EVERETT, WASH.—Vanadium Mining & Reduction Co., Alfred Stalberg president, plans installation of a reduction plant here in cooperation with Robinson Mfg. Co., whose furnace will be used.

OKANOGAN, WASH.—Twenty-Nine Pump Co. will install an additional pump unit.

SEATTLE—Peter Ivanhoff plans construction of a frame machine shop at 420 West Canal street.

SEATTLE—Broderick & Bascom Rope Co. plans a $50,000 manufacturing plant on a site at 4801 8th avenue south, plans for which have been completed by the Larkin Engineering Co., St. Louis. The building will be one story, mill construction, 61 x 228 feet.

LANDER, WYO.—Dallas Dome Wyoming Oil Co.'s boiler house and pump station near here were recently damaged by fire.

Canada

PRINCE GEORGE, B. C.—City, care V. R. Clerihue, clerk, has passed on purchase of an additional unit for the municipal power plant. Equipment will be needed.

VANCOUVER, B. C.—Contract for construction of the new steel plant of the Dominion Bridge Co. is being handled by the E. J. Ryan Contracting Co., Ltd. Decision has been made to carry out the original plans and instructions have been issued to extend the main shop 128 feet. Steel for the main building is nearly all erected. The power house is rapidly nearing completion and the concrete work is all under way.

EDMUNDSTON, N. B.—Bids will be called about March 1 by Thomas Guerrette, secretary-treasurer, for the construction of a concrete dam and buildings in connection with hydro-electric power development plant on the Grand River here. Cost of undertaking, including machinery, etc., estimated at $200,000. H. G. Acres & Co. Ltd., Niagara Falls, Ont., are consulting engineers.

DIGBY, N. S.—Digby Power Board will call for bids at once for the erection of a substation and a 600-horsepower hydraulic turbine, estimated to cost $65,000. Harold J. Campbell is superintendent.

BROCKVILLE, ONT.—Feldspar Co. of Canada, Ltd., which is associated with plants in Cleveland and Warsaw, N. Y., and is controlled by A. H. Martin, of Cleveland, proposes to start work immediately on the erection of a manufacturing plant here, to take care of the domestic and export business.

FORT WILLIAM, ONT.—The Canadian Terminal System Ltd., Toronto, Ont., proposes to build a $1,000,000 coking and gas plant here.

PETERBOROUGH, ONT.—W. Juniper, 176 Simcoe street, proposes to build a 2-story machine shop and plant on King street.

PORT ARTHUR, ONT.—Consolidated Chromium Corp., care of Mineral Research Corp., 120 Broadway, New York, is reported planning to erect a 4000-ton concentrator and construct branch line, in connection with chrome mining operations north of here. G. M. Brown, New York, is engineer.

PRESTON, ONT.—City, care E. G. Heise, clerk, contemplates purchase of substation equipment estimated to cost about $20,000.

TORONTO, ONT.—James Morrison Brass Mfg. Co., King and Duncan streets, maker of cast iron, steel and brass valves, has been acquired by Equitable Securities Corp., 67 Yonge street, and production will be considerably increased, although actual building for future is indefinite.

TORONTO, ONT.—Pittsburgh Water Heater Co., Pittsburgh, has taken steps to establish a manufacturing plant here immediately. The company will operate under the name of Pittsburgh Water Heater Co. of Canada, with head office and plant at 440 Spadina avenue. Edwin Newsome is local manager.

TORONTO, ONT.—Trane Co. of Canada Ltd., 429 King street west, has purchased a site at Leaside, Ont., on which it will erect a larger plant than the sheet metal working plant and machine shop now being built here at the above address. Trane Co. of Canada Ltd. is a subsidiary of the Trane Co., manufacturer of heating units and pumps, La Crosse, Wis.

WELLAND, ONT.—Page Hersey Tubes Ltd., 100 Church street, Toronto, Ont., contemplates erection of a seamless tube mill here, now that financing provisions for the proposed plant has been completed. Project will cost about $2,000,000.

MONTREAL, QUE.—Progressive Spring Bed Co. Ltd., 988 DeBullion street, will call for bids in the spring for the erection of a 5-story plant. M. E. Coshof, 1485 Bleury street, is architect.

MONTREAL, QUE.—Canadian Marconi Co., Ltd., 211 St. Sacrament street, has awarded contract to the Foundation Co. of Canada, Ltd., 1538 Sherbrooke street west, Montreal, Que., for the erection of a three-story factory at Mount Royal, Que., to cost $170,000. In addition a number of subtrades have also been awarded. Ross & Macdonald, 1 Belmont Street, Montreal, are architects.

Recent Incorporations

CHICAGO—Allen & Vagtborg Inc., 205 Wacker drive, has been incorporated with $25,000 capital to engage in a general engineering and construction business by Robert A. Swe, 205 Wacker drive.

CHICAGO—Ace Drop Forge Engineering Co., 5916 South Racine avenue, has been incorporated with $2400 capital to deal in drop forge dies by Kamfer, Horwitz, Halligan & Daniels, 111 West Washington street.

LINCOLN, ILL.—Metal Match Corp. has been incorporated with $30,000 capital to manufacture aluminum lighters by C. E. Steinfort, president.

INDIANAPOLIS—Midwest Steel Corp. has been incorporated with 1000 no par shares to deal in ore, iron, steel and other metals by Edward J. Boleman, 4709 Broadway.

BROCKTON, MASS.—Parker Safety Head Staple Co. Inc. has been incorporated with $50,000 capital to manufacture and deal in staples, nails and tacks by George A. Parker and Myron L. Stearns.

SPRINGFIELD, MASS.—Beebe Laboratories Inc. has been incorporated with 5000 no par shares to manufacture and deal in radios, electrical equipment and electrical accessories by L. R. Beebe, Wilbraham, Mass.

DETROIT—National Traffic Products Inc. has been incorporated with $50,000 capital and 5000 no par shares to manufacture and deal in street numbers and signs by C. A. Pfeffer, 1456 Penobscot building.

DETROIT—Detroit School of Design, 20 East Bethune avenue, has been incorporated with $20,000 to operate a vocational school in mechanical drafting, tool designing, also die and machine designing.

DETROIT—Essex Wire Corp. has been incorporated with $1,000,000 capital to operate the wire manufacturing plant recently owned by the Ford Motor Co., Highland park. The company will increase its output in expanding to other fields. A. E. Holton, 1902 Buhl building, is president.

ST. LOUIS—Summitt Mfg. Co. has been incorporated with $3500 capital to manufacture electrical specialties by W. F. Meyer, president, 5900 South Broadway.

ST. LOUIS—Rothrock Mfg. Co. has been organized with $3000 capital to manufacture grinding machine attachments by W. W. Rothrock, president, 1912 Pine street.

ST. LOUIS—Remco Gauge Co. has been incorporated to manufacture liquid gauges for storage tanks by R. L. Roemmich, 2617 Pestalozzi street.

BAYONNE, N. J.—Jersey Can Co. has been incorporated with 1000 common shares to manufacture tin cans by Tucker & Tucker, 487 Broadway.

BOGOTA, N. J.—Step Rods Mfg. Co. Inc. has been incorporated with $25,000 to manufacture household hardware by Warren E. Willis, mechanical engineer, 15 Park Row, New York.

HIGHLANDS, N. J.—King Boat Works Inc. has been incorporated with $50,000 preferred stock and 5000 common shares to build boats by George E. Jenkinson Jr.

JERSEY CITY, N. J.—Alloys Foundry Corp. has been incorporated with 25,000 common shares to deal in foundry castings by United States Corporation Co., 150 Broadway, New York.

MOUNT HOLLY, N. J.—Arrow Safety Device Co. has been incorporated with 5000 common shares to manufacture signal devices by William S. Darnell, attorney, 423 Market street, Camden, N. J.

NEWARK, N. J.—Dunham Body Corp. of New Jersey has been incorporated with $100,000 preferred and 10,000 shares of common stock to manufacture automobiles by George W. Anderson, 763 Broad street.

NEWARK, N. J.—Chloromite Corp. of America has been incorporated here with $50,000 preferred stock and 2500 shares of common stock to manufacture chemicals by United States Corporation Co., 150 Broadway, New York.

NORTH ARLINGTON, N. J.—Welcon Industries Inc. has been incorporated with 2000 common shares to manufacture electrical appliances by United States Corporation Co., 150 Broadway, New York.

NEW YORK—New Art Casting Co. has been incorporated with $1200 to make steel castings by Attorneys Service Co., 299 Broadway.

NEW YORK—Albia Machine Works has been incorporated with $6000 to operate a machine shop by W. J. Spalckhaver, Long Island City, N. Y.

NEW YORK—Urdika Wire Die Works has been incorporated with $20,000 capital to deal in jewelers' tools by Karelson & Karelson, attorneys, 230 Park avenue.

New Trade Publications

BOXBOARD MACHINERY—Perkins & Co., Grand Rapids, Mich., have issued a catalog of their shingle heading and boxboard machinery.

INDUSTRIAL BUILDING—A leaflet by the Osborn Engineering Co., Cleveland, calls attention to its resources in planning and executing industrial buildings of varied types.

POWER TOOLS—W. Bingham Co., Cleveland, is distributing a circular on Millers Falls Co. electric portable tools, offering demonstrations of their working.

CONTROL PYROMETER—Republic Flow Meters Co., Chicago, continues its series of circulars on its control pyrometer, offering a demonstration in the plant of any inquirer.

DIAMOND TOOL BORING MACHINE—Automatic Machine Co., Bridgeport, Conn., is distributing engineering data bulletins on its diamond tool boring machines. The machines and their products are described and illustrated.

RESISTANT METALS—A bulletin has been issued by the Duraloy Co., Pittsburgh, on its chromium and chromium-nickel steels for resistance to oxidation, corrosion and abrasion. It is well illustrated.

RIVETERS—Hanna Engineering Works, Chicago, has issued a bulletin on its riveters, sketching some of the high lights of accomplishments made possible by their use. Various types of riveters are illustrated.

NICKEL ALLOY STEEL—International Nickel Co. Inc., New York, is distributing its revised buyers' guide of sources from which various descriptions of its nickel steel alloys may be obtained. It is a useful reference book for those using these materials.

OVERLOAD SWITCH—A bulletin by Cutler-Hammer Inc., Milwaukee, features its new, free tripping thermal overload switch for fractional horsepower motors. It provides protection against overloads, blown fuses and other troubles.

STEEL BOILERS—Lancaster Iron Works Inc., Lancaster, Pa., is distributing a leaflet on the Monitor U-tube boilers formerly manufactured by the Monitor Bi-Loop Radiator Co., now taken over by the former through purchase of the latter company.

STEEL CASTINGS—Lebanon Steel Foundry, Lebanon, Pa., discusses the economy of high grade steel castings designed for use with high pressure steam, to avoid leaks and consequent losses. Illustrations show their use to prevent waste.

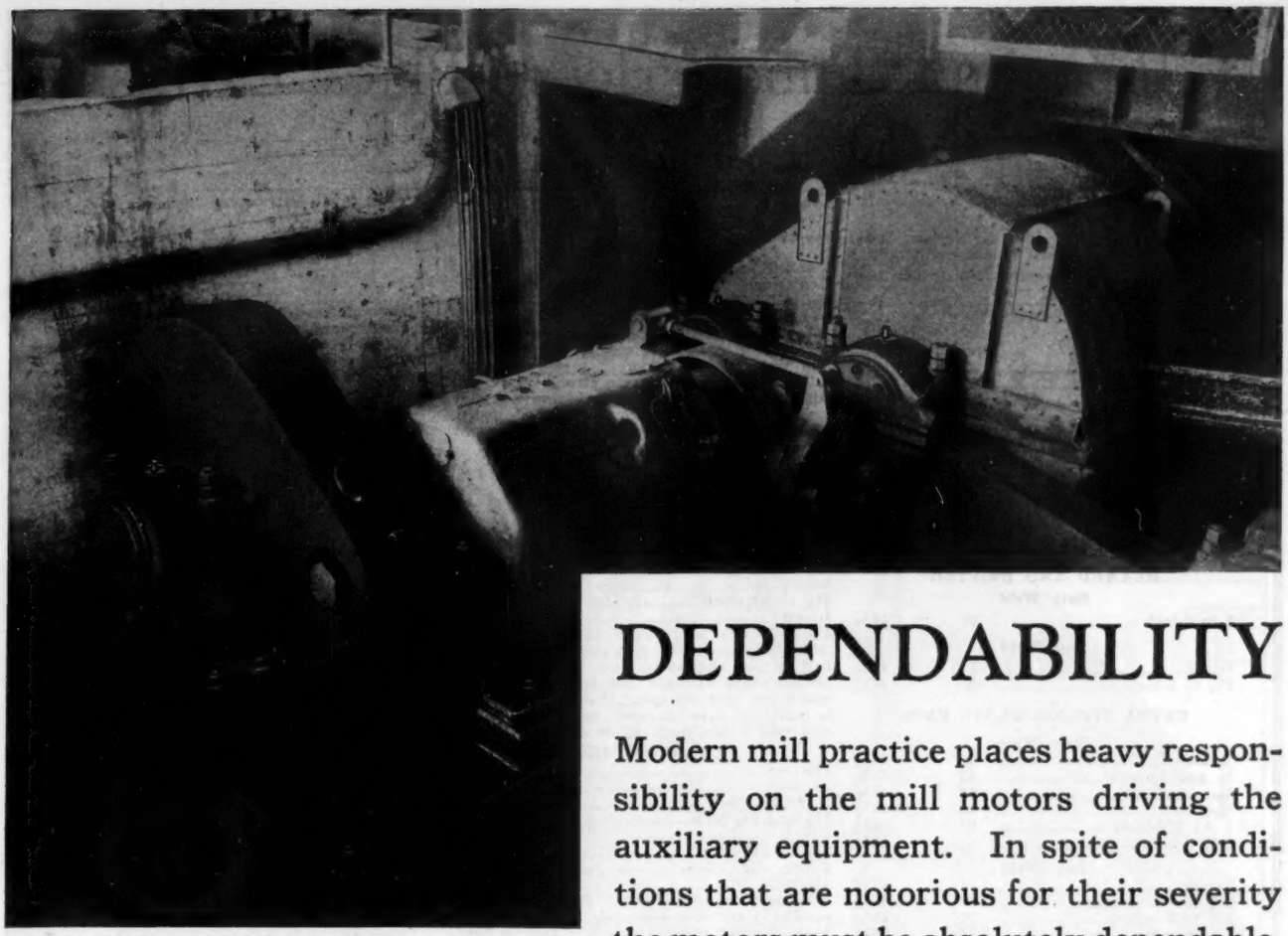
GEARS—Grant Gear Works Inc., Boston, is distributing a catalog of its stock and special gears for industrial use in a wide variety of forms. It also covers speed reducers, flexible couplings and much information relating to these devices.

GRINDING MACHINES—Norton Co., Worcester, Mass., manufacturer of grinding machines, describes in a current catalog its universal line of grinding machines, with equipment and attachments. The machines are described and illustrated and details of construction and specifications are given.

DROP HAMMERS—Erie Foundry Co., Erie, Pa., has issued a bulletin on one type of its steam drop hammers. This type was introduced recently, including extended frame construction, ring type motion valve and bushing and new guide design. It also gives additional data and maintenance instructions.

LUBRICATION—Texas Co., New York, devotes the current issue of its publication on lubrication to discussion of the relation of carbon residue to lubricating performance. An important section discusses the relation of operating conditions to carbon residue developments. To users of internal combustion engines, gas or diesel, the facts developed in this investigation are of much interest.

UNIT HEATERS AND RADIATORS—Bulletins by the Young Radiator Co., Racine, Wis., describe the company's heavy duty radiators and unit heaters. The former are designed for power machinery with special reference to demands for sturdy construction and reliable performance. The latter are designed for use in heating large spaces by radiation and forced air currents. Illustrations indicate their use and engineering data give much information.



DEPENDABILITY

Modern mill practice places heavy responsibility on the mill motors driving the auxiliary equipment. In spite of conditions that are notorious for their severity the motors must be absolutely dependable.

When motors are equipped with Timken Bearings their dependability is assured once and for all. Heat, dirt, neglect, abuse, the worst conditions they are liable to encounter, cannot affect the continuity of their service.

TIMKEN BEARING EQUIPPED

And, what is even more important the protection furnished by the exclusive Timken combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS,* and Timken steel is permanent during the life of the motor.

THE TIMKEN ROLLER BEARING COMPANY
CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net price per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B..	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection ..... No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet.....No extra

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c